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With the Authors' Compts.

# ON BONE-SETTING.

W. B. McQuitty

# ON BONE-SETTING

(*SO CALLED*),

AND

ITS RELATION TO THE TREATMENT OF JOINTS CRIPPLED BY INJURY, RHEUMATISM, INFLAMMATION, &c. &c.

BY WHARTON P. HOOD, M.D., M.R.C.S.

London and New York:
MACMILLAN AND CO.
1871.

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R. CLAY, SONS, AND TAYLOR, PRINTERS,
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# PREFACE.

THE substance of the following pages appeared in the columns of the *Lancet* during March and April of the present year. My own impression of the practical importance of the subject, strengthened by the numerous letters I have since received from many members of the profession, has induced me to re-publish the papers in a separate form, with such additional matter as I could command. The following is the history of their production :—

About six years ago my father, Dr. Peter Hood, in conjunction with Dr. Iles of Watford, attended the late Mr. Hutton, the famous bone-setter, through a long and severe illness. On his recovery my father refused to take any fees from Mr. Hutton, out of consideration for the benefit which he had rendered to many poor people. Mr. Hutton expressed himself as being thereby placed

under great obligation, and as being very desirous to do something to show his gratitude. He offered, as an acknowledgment of the kindness he had received, to explain and show all the details of his practice as a bone-setter. Pressure of work prevented my father from availing himself of this offer, and Mr. Hutton then extended it to me. After some consideration, I determined to accept it; and accordingly I went, when I could spare the time, to Mr. Hutton's London house, on the days of his attendance there. My decision was prompted not only by the curiosity I felt to see how he treated the cases that came under his care, but also by the desire to make known to the profession, at some future time, any insight that I could gain into the apparent mystery of his frequent success. I did not feel justified, however, in publishing anything during Mr. Hutton's lifetime, because, although he exacted from me no conditions, he was freely imparting what he thought, and was fairly entitled to think, an important and valuable secret. I have not hesitated, however, to discuss his methods with

private friends; and Mr. Hutton's recent death has released me from any scruples about the propriety of making these methods more widely known.

During a second illness from which Mr. Hutton suffered, I took absolute charge of the poorer class of patients whom he was accustomed to attend gratuitously, and found that I could easily accomplish all that I had seen him do. I declined, however, to undertake the remunerative portion of his practice, and from this and other reasons my intercourse with him had wholly ceased for about two years prior to his death. I found, however, that it had lasted long enough to give me knowledge of a kind that is not conveyed in ordinary surgical teaching, and that, when guided by anatomy, is of the highest practical value, as well in preventive as in curative treatment.

In the present work, therefore, I purpose giving a brief account of the salient features of a bone-setter's method of procedure in the treatment of damaged joints, of the results of that treatment, and of the class of cases in which it was successful. And

here, in the first place, I must bear tribute to Mr. Hutton's perfect good faith and honesty. He had received but a plain education, was entirely destitute of anatomical knowledge, and firmly believed the truth of his ordinary statement that "the joint was out." To him there was no other possible explanation of a constantly recurring sequence of events. A joint previously stiff, painful, and helpless, was almost instantly restored to freedom of action by his handling, and the change was often attended by an audible sound, which he regarded as an evidence of the return of a bone to its place. When this, to him, pleasant noise was heard, he would look in his patient's face and say, in his broad dialect, "Did ye hear that?" The reply would be "Yes;" and his rejoinder, "Now ye're all right—use your limb." To the patient, probably as ignorant of anatomy as Mr. Hutton himself, who had hobbled to him on crutches, often after prolonged surgical treatment, and who went away "walking and leaping," it can be no matter for surprise that the explanation was also fully sufficient.

When I first knew Mr. Hutton, I often tried to argue the point with him, and to explain what it really was that he had done. I soon found, however, that, if I wished to learn from him, I must simply content myself with listening and observing. He had grown old in a faith which it was impossible to overturn.

I think, however, that the time is come when the profession should no longer be prevented, by the customary mis-statement that "a bone is out," from making themselves acquainted with the means by which the conditions thus falsely described may be cured; and at which they may also reconsider with advantage some of those traditions about rest and counter-irritation which have been handed down to them through successive generations of surgeons.

UPPER BERKELEY ST., PORTMAN SQ.
*July* 1871.

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# A TREATISE

ON

# BONE-SETTING, ETC.

## CHAPTER I.

### INTRODUCTORY.

IT is known to most practitioners of surgery, and has become known to many to their great cost and loss, that a large proportion of cases of impaired mobility or usefulness of limbs, after disease or injury, fall into the hands of a class of men called "bone-setters." In all these cases it is the custom of such men to say that the affected bone or joint is "out," although there may be an entire absence of the anatomical signs of displacement; and then to proceed in due course to the performance of manipulations by which, in many instances, the patient is speedily cured. Teachers

of surgery, when they condescend to speak at all of bone-setters and their works, are more prone to dilate upon the injury sometimes occasioned by assumed "rough" handling, than upon the improvement which it oftentimes effects. It is doubtless necessary to caution students against twisting or pulling an inflamed or ulcerated joint; but it would surely also be well to inquire carefully what is the nature of the cases in which bone-setters do good, and what is the change which their manipulations bring about. Mr. Paget, in a clinical lecture delivered at St. Bartholomew's, and published in the *British Medical Journal* three years ago, stands probably alone in having made this laudable attempt; but he laboured under the disadvantage of being guided only by conjecture, or by the imperfect descriptions of patients, in his ideas of the nature of the bone-setter's treatment. It necessarily followed that his conjectures were in some respects erroneous; but his authority may none the less show the great practical importance of the questions at issue. He says to his students: "Few of you are likely to practise without having

a bone-setter for your enemy; and if he can cure a case which you have failed to cure, his fortune may be made and yours marred." It would at first sight seem likely that the conditions thus stated by Mr. Paget could only be realized in the practice of surgeons of slender skill, and among the poorer and more ignorant classes of the community. This surmise, however, would be very wide of the truth; for I shall have to refer to instances in which the failures have been those of men not less eminent than Mr. Paget himself, and in which the patients have occupied positions of prominence or distinction. Such cases may not only seriously injure the individual practitioner, but they serve to lower the whole art of surgery in the estimation of the public. They render it obligatory, I think, upon any one who may possess the power, to place before the profession a clear account of the so-called bone-setting—of its methods, its failures, and its successes. To this task, so far as my powers extend, I purpose to address myself in the following pages.

What has been called bone-setting may be con-

cisely defined as the art of overcoming, by sudden flexion or extension, any impediments to the free motion of joints that may be left behind after the subsidence of the early symptoms of disease or injury; perhaps, indeed, more frequently of the latter than of the former.

I could, perhaps, describe no more typical case, and none of more frequent occurrence, than the following:—

A healthy man sustains a fracture of one or both bones of the forearm, and applies at a hospital, where splints are adapted in the usual way. He is made an out-patient, and the splints are occasionally taken off and replaced. After the lapse of a certain number of weeks the fracture becomes firmly united, the splints are laid aside, and the man is discharged cured. He is still unable to use either his hand or his forearm, but is assured that his difficulty arises only from the stiffness incidental to long rest of them, and that it will soon disappear. Instead of disappearing, it rather increases, and in due time he seeks the aid of a bone-setter. The arm and forearm are then

bent nearly at a right angle to each other; the forearm is intermediate between pronation and supination; the hand in a line with it; and the fingers are straight and rigid, the patient being unable to move them, and also unable to move either the wrist or elbow. Passive motion can be accomplished within narrow limits, but produces sharp pain, distinctly localized in some single spot about each joint, in which spot there will also be tenderness on pressure. The bone-setter will tell the man that his wrist and his elbow are "out." The man may object that the injury had been in the middle of the forearm—perhaps from a blow or other direct violence. The reply would be that perhaps the arm had indeed been broken as alleged, but that the wrist and the elbow had been put out at the same time, and that these injuries had been overlooked by the doctors. The bone-setter would then, by a rapid manipulation hereafter to be described, at once overcome the stiffness of the fingers, and enable the patient to move them to and fro. The instant benefit received would dispel all scruples about submitting the wrist and the

elbow to manipulation; and these also would be set free in their turn. The man would go away easily flexing and extending his lately rigid joints, and fully convinced that he had sustained grievous harm at the hands of his legitimate doctors.

This, however, like all types, is to some extent an ideal case; and it may be worth while to append to it a series of actual narratives. In one instance, where I have obtained permission to do so, I have given the name of the patient, not only as a guarantee of authenticity, but also as an additional evidence that the art of the bone-setter has been successfully called into requisition by persons who were able to command, and who actually did obtain, the aid of London surgeons of the highest professional position. The fact that these gentlemen failed to cure the patients, and that a quack immediately succeeded in doing so, is the ground of my belief that the practice of the bone-setter has not only lain in what the *Lancet* calls a "neglected corner of the domain of surgery," but also that it has been based upon sound traditions handed down from some earlier day. I

can believe it possible that the first "bone-setter" was the servant or the unqualified assistant of a surgeon who had known exactly what could be done by sudden movements, and how those movements should be executed.

Such knowledge might easily perish as a professional possession (for, even in our own day of books and pamphlets and journals, what a vast amount of the experience of every man dies with him!), and might as easily be handed down as the secret of a quackery by those who had good reason to appreciate its value.

From the inquiries I have been able to make, I gather that the practice of all bone-setters is much alike as far as manipulation is concerned, and that they differ in the results they bring about partly because some of them possess more natural mechanical tact than others, but in a far higher degree because some possess sufficient acuteness of observation to note and to remember the manifest symptoms in cases that turn out unfavourably, and to avoid others like them in the time to come. Mr. Hutton probably owed his reputation and suc-

cess to a combination of both these qualities. It would be impossible for any man who was ignorant of anatomy and pathology to enter upon the career of a bone-setter without doing much mischief and encountering many disastrous results; but it would be quite possible for him, if sufficiently intelligent, to learn to shun pitfalls by the light of experience. He would come in time to know the aspect of joints that it was prudent to leave alone, as well as of those that might be moved with safety and advantage. Experience, however, would in no way enlighten him with regard to the nature of the difference, or with regard to the character of the lesions that he relieved. The tradition of the craft is that "a bone is out," and to this statement its members steadily adhere, less perhaps from duplicity than from pure ignorance.

A sufferer comes with a joint that is stiff, painful, and helpless; and such a joint is restored to freedom and activity by movements that produce an audible sound, easily to be regarded as being caused by the return of a bone to its place. To the patient, as well as the bone-setter (both being

equally ignorant of anatomy and the meaning and signs of dislocation), the explanation appears to be amply sufficient; and a surgical denial that any such injury had existed would carry but little weight with a sufferer whom the surgeon had failed to cure, or with the non-professional witnesses of the case.

The effect produced upon such persons may be illustrated by the following letter, which appeared in the *Echo* newspaper in March 1870:—

"SIR,—A short time ago, a painter, working for me, fell from one floor to another, was much hurt, and sent to Bartholomew's Hospital. After remaining there about three weeks he was sent out as cured, although he could not walk without crutches. After about a fortnight, seeing that he got no better, I sent him to Mr. Hutton, of Wyndham Place, Crawford Street, W., who found that his left hip and knee were both dislocated, which since then he has put into their right places, and the man now comes to his work as he used to do before the accident.

"I have several other cases showing the incapacity of the surgical profession. They, the students, are taught to know how to amputate legs and arms and make cripples, but not one of them knows how to deal with dislocations, and thus save the necessity of amputation. I have myself been the cause of saving, through Mr. Hutton, two legs from being cut off. Of this I am ready to give positive

proof. This question is worth attention, with the view to establish a hospital for dislocations. I am quite ready to assist and be a considerable subscriber, in case the project can be realized.

"Yours respectfully,

"THOMAS LAWES."

"65, CITY ROAD."

I think there can be little doubt that the neglect of the profession to inquire into the truths lurking under bone-setting has been mainly due to two causes. First, to the serious and often fatal results that have occurred in the practice of all bone-setters, and that have probably occurred very often in the hands of the less skilful and less discreet members of the fraternity. Secondly, to the practical effect of the statement that a "bone was out," and that it had been replaced. Surgeons who knew this statement to be entirely without foundation have perhaps been too ready to attribute it to intentional fraud, and a desire to deceive; and have not been sufficiently ready to make allowances for the ignorance of those with whom it originated. Hence they have been annoyed and disgusted both by its falsity and by

the imputation which it would cast upon themselves, and have attributed the cure to the operation of mental influences, or to the mere lapse of time, or to the effect of previous treatment, and have refrained from inquiring what colourable ground there might be upon which the idea of dislocation could rest, or what change the manipulations of the bone-setter had really brought about.

With these preliminary observations I proceed with the account of the cases to which I have referred :—

A gentleman whom I will call Mr. A——, when sitting on a stool in his office, hastily descended to welcome a friend. As soon as his feet reached the ground he turned his body without moving them, and in doing so he twisted or wrenched his left knee. He immediately felt considerable pain in the joint, which lasted for an hour or two, but decreased as the day wore on ; and he continued to move about as occasion required. In the night he was aroused by increased pain, and found the joint much swollen. Mr.

A—— was the brother of the professor of midwifery at one of the principal medical schools in London, and he had the best surgical advice that London could afford. He was ordered to rest the limb, and to apply heat and moisture. In this way he obtained some diminution of the pain, but the swelling continued. He at last sent for Mr. Hutton, who at once declared that the knee was "out," and proposed to replace it. An appointment for this purpose was made, but in the meantime the patient had again seen eminent surgeons, and he wrote to prevent Mr. Hutton from coming. Two years of uninterrupted surgical treatment passed without improvement, and then Mr. A—— sent for Mr. Hutton again. On this, the second visit, I accompanied him, and what I witnessed made a great impression on my mind. We found the knee-joint enveloped in strapping; and when this was removed, the joint was seen to be much swollen, and the skin shining and discoloured. The joint was immoveable, and very painful on the inner side. Mr. Hutton at once placed his thumb on a point over the lower edge

of the inner condyle of the femur, and the patient shrank from the pressure and complained of great pain. He (Mr. Hutton) made no further examination of the limb, but said, "What did I tell you two years ago?" Mr. A—— replied, "You said my knee was out." "And I tell you so now," was the rejoinder. "Can you put it in?" said Mr. A——. "I can." "Then be good enough to do so," said Mr. A——, holding out his limb. Mr. Hutton, however, declined to operate for a week; ordered the joint to be enveloped in linseed poultices and rubbed with neat's-foot oil, made an appointment, and took his leave. During the dialogue I had carefully examined the limb, had satisfied myself that there was no dislocation, and had arrived at the conclusion that rest, and not movement, was the treatment required. At the expiration of the week I went again to the house, and Mr. Hutton arrived shortly afterwards. "How's the knee?" was his inquiry. "It feels easier." "Been able to move it?" "No." "Give it to me." The leg was stretched out, and Mr. Hutton stood in front of the patient, who hesitated, and lowered his

limb. "You are quite sure it is out, and you can put it right?" There was a pause, and then, "Give me your leg, I say." The patient obeyed reluctantly, and slowly raised it to within Mr. Hutton's reach. He grasped it with both hands, round the calf, with the extended thumb of the left hand pressing on the painful spot on the inner side of the knee, and held the foot firmly by grasping the heel between his own knees. The patient was told to sit steadily in his chair, and at that moment I think he would have given a good deal to have regained control over his limb. Mr. Hutton inclined his knees towards his right, thus aiding in the movement of rotation which he impressed upon the leg with his hands. He maintained firm pressure with his thumb on the painful spot, and suddenly flexed the knee. The patient cried out with pain. Mr. Hutton lowered the limb, and told him to stand up. He did so, and at once declared he could move the leg better, and that the previously painful spot was free from pain. He was ordered to take gentle daily exercise, and his recovery was rapid and complete. In a

few days he returned to business, and from that time until his death, which occurred three years afterwards, his knee remained perfectly well.

A case hardly less remarkable was that of the Hon. Spencer Ponsonby, which attracted considerable attention at the time. As Mr. Ponsonby has kindly written out for me the history of his case, and as his description is very graphic, I cannot do better than give it in his own words. I need only add to it that the initials A——, B——, C——, &c., represent the names of men of considerable standing in the profession.

"On Nov. 26th, 1864, in running across the garden at Croxteth, near Liverpool, I felt and heard something crack in the calf of my left leg. It was so painful that I rolled over like a shot rabbit, and could scarcely reach the house, a few yards off. I at once put my leg up to the knee in a pail of hot water, and boiled it for an hour. Next day, being no better, I sent for a medical man in the neighbourhood, who told me I had snapped a muscle, and must keep quiet for a few days. He rubbed in a strong liniment, there

being no sign of inflammation; and put on a strong leather plaster. In a couple of days I was able to hobble; but being telegraphed to London, and going into an empty house, I knocked my toe against a tack in the floor, and hurt myself worse than ever.

"From this time (Dec. 2nd) to the beginning of May I was attended by Mr. A—— and Mr. B—— in consultation, who agreed in saying that the 'stocking of the calf was split' (gastrocnemius, I think they called it), and treated me accordingly. Occasionally my leg got better; but the slightest exertion produced pain and weakness.

"On the 2nd of May, Mr. C—— undertook me. He agreed as to the injury, but thought that, constitutionally, I was out of order, and gave me some iron, &c., without effect. My leg was also fixed in an iron machine to relieve the muscles of the calf from the weight of the leg. Another eminent surgeon came in consultation on June 26th. He agreed in Mr. C——'s treatment, and in the cause of the lameness, as did Dr. D——, who was consulted as to my going to Wildbad.

"*Aug.* 14*th.*—As I did not improve, Mr. C—— put my leg into a gum-plaster for a month. I then went yachting, so as to obtain perfect repose for that time. My health, which had been getting bad, was improved by the sea-air, but my leg was no better. The surgeon on board the yacht, Dr. E——, also examined me, and agreed as to the cause of the lameness, but said, 'An old woman may cure you, but no doctor will.'

"On Sept. 7th the gum-plaster was removed, and galvanism was then tried for about three weeks. At the end of this time I went on a yacht voyage for four months, and, during the whole of this period, had sea-water douches. All this time I had been either on crutches or two sticks. My health was much improved by the sea-voyage, but my leg was the same as before, and had shrunk to about half its proper size.

"*April* 5*th.*—Mr. F—— began his system to cure my leg. His idea was, that the muscles were separated, but that if brought together continuously, they would rejoin. I wore a high-heeled boot during the day, and during the night

my heel was fixed so that it was kept in the same position. No good arose from this treatment, and consequently, after a month's trial, I went to Mr. Hutton, who, on seeing my high heel, said, 'What do you wear that machine for? Do you want to lame yourself?' I was proceeding to tell him the opinion of the various surgeons on my case, when he said, 'Don't bother me about anatomy; I know nothing about it: but I tell you your ankle is out, and that I can put it in again.'

"After a few weeks, during which he had been to the North, and could not therefore undertake my case, I returned to him on June 27th, telling him that I had in the meantime consulted surgeons who had assured me that, whatever else might ail me, my ankle was most assuredly 'all right,' but that I would notwithstanding submit to his treatment. He again examined me most carefully, beginning at the ankle round bone, and he then put his thumb on to a place which hurt me a good deal, and produced a sensation of a sharp prick of a pin. He proceeded to operate

upon me, and, after a time, there was a distinct report, and from that moment the pain was gone. Mr. Hutton desired me to walk moderately, but to take no violent exercise for a long time, and to use a good deal of cold water. From that moment my leg gradually got better. I was able to walk out shooting quietly in September, and on the 14th October, having missed a train, walked home fifteen miles along the high road. In the following year I resumed cricket, tennis, and other strong exercise, and have continued them ever since.

"I omitted to mention that on July 5th, 1866, about a week after my first operation, I hurt my leg again by over-exertion, and was as lame as ever. But Mr. Hutton repeated his treatment, and I have never had another relapse. His statement to me was, that the ankle-joint being misplaced, the muscles were also misplaced, and would not heal."

The history of the following case has been kindly communicated to me, partly by the patient himself, and partly by my friend Mr. Keyser, of

Norfolk Crescent, who took charge of it at a late period. The patient, Mr. G——, was a member of the House of Commons, and had been in good health until October 1866.

One morning, in the beginning of that month, while staying in the country, he awoke suffering from severe pains in almost every joint of his body. He remained in bed until his servants were stirring; and when assistance came, he tried to rise. He found himself almost unable to do so, but by dint of great effort he succeeded, only to return to bed again after a short interval. The pain, which was decided by his medical advisers to be rheumatic in character, increased as the day wore on, and ultimately centred in the left knee and left wrist, where it was accompanied by considerable swelling and heat of the joints.

The patient was treated for this condition in the usual manner; and, after the lapse of some time, his pain was relieved. He then came to town, and was under the care of Mr. Keyser and two hospital surgeons. Notwithstanding all treat-

ment, however, his knee and wrist were left immovable. Active mischief having at length ceased, gentle passive motion of the joints was tried; but was discontinued on account of the extreme pain produced when an attempt was made to flex either limb beyond a certain angle. A starch bandage was then applied to the knee, but proved unbearable, and was removed at the end of two days. Various local remedies were next employed, and by the aid of crutches Mr. G—— was rendered able to hobble about.

Six months after the commencement of his malady, no marked change having taken place, he determined to try what a bone-setter could do for him. He sent for Mr. Hutton, who placed his thumb upon a spot on the inner side of the knee, and produced great pain by pressure there. Mr. Keyser, who was present, placed his thumb also on the same spot, and assured himself of its tenderness. The delay of a week for poulticing and oiling was recommended; and at the end of that time the joints were manipulated in the customary manner; and the painful spot when

sought for by Mr. Keyser was no longer to be found. Comparative freedom of motion followed the treatment. The patient was at once able to cross the affected knee over the other, a position never attained since the beginning of the illness, and the usual motions of the joint were not only nearly perfect, but were unattended by pain. In Mr. G——'s own words, he felt, after the operation, that the leg had once more got into a line with the thigh. He then made rapid progress to recovery, and soon regained the almost complete power over his knee which he still possesses.

The important point in his case was the fact that he had remained for many weeks stationary, with tenderness on the inner side of his knee, and that the immediate effect of the manipulation to which he was subjected was the loss of this tenderness, and the commencement of a speedy recovery of normal function.

The next case has been kindly communicated by Dr. Douglas Reid, of Pembroke. Lady ——, having sustained an accidental injury to one of her thumbs, was taken by her father to a very

distinguished hospital surgeon, under whose advice a splint was applied, and iodine used externally.

At the end of some weeks the joint was still stiff, useless, and tender; and the patient heartily tired both of its condition and the treatment. She determined to apply to a bone-setter, who gave the usual verdict upon her case, and with a single sharp flexion and extension restored her to comfort, and the injured thumb to usefulness.

Such, together with others to which I shall come in the sequel, are the kind of cases in which some of the best skill of surgeons has been at fault, and in which speedy relief has been given by the proceedings of a quack. It will be the object of the following pages to show to what principles these proceedings were indebted for their curative power; and in what way the application of these principles may be undertaken, safely and scientifically, by the legitimate members of the profession.

## CHAPTER II.

### PATHOLOGY.

PREMISING that the treatment employed by bone-setters consists in the sudden and forcible overcoming of resistance to motion, it is necessary to inquire what is the nature of the cases in which this treatment may be beneficially employed, and what are the impediments that can be thus overcome. The actual practice of bone-setters is rendered more perplexing than it need be by their errors—that is, by their liability to overlook conditions which should prohibit interference; but, if abstraction be made of this source of difficulty, it will be found that the cases they treat successfully have certain common characters on which a classification may be based.

They originate, in most instances, in disease or injury either of the affected joint itself or of some

part contiguous to it, and the immediate effects of the disease or injury must have already in great part passed away. If the joint itself has been originally implicated, it will usually be more or less tumid and tender, with perhaps a slight elevation of temperature; but if not originally implicated, these conditions will not exist. In any case it will be stiff, and will be described by the patient as "weak;" and an attempt to move it beyond a certain range will be productive of pain. On careful examination some spot will be found, often very limited in extent, at which pain is produced by pressure, and it will be from this spot that the pain of movement radiates. In most instances the original mischief will have been treated by rigidly enforced rest, and the patient will often present himself wearing some splint, bandage, machine, or other appliance in restraint of movement. It is quite necessary, however, that some possibility of passive movement should remain, and bone-setters are powerless against true osseous anchylosis, in which joints are absolutely fixed and painless. They avoid

cases in which there is much heat, or swelling, or redness, or acute general pain; and also cases in which there is any discharge of dead bone, or even of pus; except possibly in a few examples of what a surgeon would describe as sinuses in the neighbourhood of a joint, but not actually implicating it. The various positive and negative conditions thus described may of course be variously brought about, and the morbid states that are actually successfully treated I should classify in the following manner:—

1. Stiffness and pain of joints following fracture of one of the bones forming them. These cases are of two classes: (*a*) simply stiff joints, rendered so by want of movement, and by having been included in the splints applied to the fracture; and (*b*) stiff and swollen joints, which had been more or less implicated in the original injury.

2. Sprains, whether of recent date or of old standing, but which have been treated by rigidly enforced rest.

3. Joints that have been kept at rest voluntarily for the avoidance of pain, either after some injury

to themselves, or to the soft parts around them, or after some painful disease affecting either—*e.g.* a stiff shoulder-joint following inflammation and suppuration of the bursa beneath the deltoid muscle; or a stiff hip-joint after inflammation of the bursa over the great trochanter.

4. Rheumatic and gouty joints.
5. Displaced cartilages.
6. Ganglionic swellings about the carpus.
7. Subluxation of bones of the carpus and tarsus.
8. Displaced tendons.
9. Hysterical joints.

The manipulation of cases of nearly all these kinds has fully convinced me that when a joint is kept at rest, it is apt to undergo changes in restraint of movement affecting either its own structures or those immediately surrounding it. It is probable that some constitutional states involve a special proclivity to such changes, and that they occur earlier in some persons than in others. It would be difficult to speak with certainty about their seat or nature without anatomical examination; but they resist passive motion

with a sort of elastic resistance, as if the joints were restrained by ligamentous or strong fibrous tissue. Possibly, in some cases, the proper ligaments may become contracted or rigid, or adherent to neighbouring parts; in others, external or internal adventitious fibrous bands may be formed; in others, muscles may have undergone shortening. Again, effusion may have become solidified, and thus movement be impaired, as if by a state of things analogous to a rusty hinge. It is even probable that one effect of rest may be to diminish secretion (the natural stimulus afforded by movement being withdrawn) both in the articulations themselves and in the sheaths of tendons; and so to produce a kind of unnatural dryness, analogous to that which we may suppose to exist in the case of a horse that is "stiff at starting." In all, however, the impediment to motion becomes a source of pain when motion is attempted; and this pain is often erroneously looked upon as an indication for continued rest. A patient will unintentionally deceive his surgeon by saying that the affected joint "feels weak,"—an expression

that seems naturally to suggest the use of some form of mechanical support. While this is worn it gives a slight increase of power, but its removal leaves the former condition essentially unchanged. The meaning of "weakness" in such cases is that the joint cannot be moved without pain, and people only use the word for want of knowing how to describe accurately the existing condition. Any one who has ever suffered from lumbago will understand this. A person so suffering feels "weakness" in the sense that the power to rise from the recumbent posture is apparently gone. It is not really gone, but there is an instinctive dread of calling the affected muscles into action; and this dread conveys to the mind an impression of inability to move, which can only be overcome by a most determined effort of the will.

Now, the cases in which bone-setters attain their successes are those in which some restraint of movement, due either to an injury or to the rest consequent upon it, or to both together, and which painfully checks the motions of the joint, admits of being at once overcome by manipulation. In

the case of Mr. A——, already described in the preceding chapter, no doubt some adventitious band was restraining movement, and that one of its attachments was to the lower margin of the internal condyle of the femur. Pain at this spot was experienced, and further movement was checked, as soon as the band was rendered tense. Its frequent traction upon its insertion caused that part to be constantly tender under pressure; and its generally disturbing influence excited and maintained an irritated and swollen condition of the joint. Mr. Hutton ruptured the band when he twisted and sharply flexed the limb; and all the troubles consequent upon its presence either immediately or gradually subsided. I frequently saw him handling joints which at the time seemed to me not likely to be improved by such treatment; and yet, when the operation was finished and much pain had been produced, the patients joyfully expressed their sense of increased power and freedom of movement.

It has often been pointed out by distinguished writers on medicine, and by none more forcibly

than by Sir Thomas Watson, that the variety of structures contained within the eye renders it liable to many of the diseases that affect other parts of the body, while its transparency allows them to be studied with a precision that is unattainable elsewhere; and that it is hence well calculated to afford a key to many obscure questions in pathology. I venture to think that we may obtain an illustration from it in the present instance.

It is well known that, in moderately contracted states of the pupil, the posterior surface of the iris rests in absolute contact with the anterior surface of the crystalline lens; but that, when the pupil is fully dilated, the two structures are separated by a layer of aqueous humour.

When the iris is inflamed, if it continue in absolute contact with the lens, we see adhesions take place speedily; whereas, if the pupil be well dilated, and its margin no longer touches the lens, the lymph that would have formed an adhesion remains as an harmless nodule, or becomes diffused through the aqueous humour.

We therefore see that, in a shut cavity containing fluid, the effect of inflammation is to produce speedy agglutination between surfaces in contact.

The adhesions produced by iritis may, at an early stage of their formation, be stretched by movement. The application of atropine will dilate the pupil; and if made in time will transform the adhesion into a band, or will even detach or rupture it. If the application be too long delayed, the adhesion will resist its influence, and the lymph will undergo a subsequent process of contraction.

When the subsidence of an attack of iritis leaves behind it an adhesion that has neither been detached nor thoroughly stretched, this in most cases becomes a source of future trouble. It abruptly checks the natural changes of the pupil at some given point. When this happens, the patient is often conscious of a feeling of tension, the eye is generally more or less irritable, and another attack of iritis will sooner or later be the result.

The original iritis may not only be excited by direct injury, or arise from syphilis, rheuma-

tism, exposure to cold, or other general cause, but it may be, and often is, produced by the extension of inflammation from parts external to the ocular cavity, as from the conjunctiva in purulent ophthalmia.

Now, reasoning from the analogies thus presented to us, I am disposed to infer that intra-articular inflammation, however arising, may easily produce adhesions between surfaces resting in apposition; that such adhesions, if so placed as to restrain movement, will cause pain and irritation whenever they are rendered tense; and that inflammation sufficient to produce them may be insidiously set up in a joint by extension from neighbouring structures.

In support of this view, Sir B. Brodie, in his work on "Diseases of the Joints," says: "I have seen several cases where, from the appearance of the joint and other circumstances, there was every reason to believe that the inflammation had produced adhesions, more or less extensive, of the reflected folds of the membrane (synovial) to each other; and I have observed occasionally in dis-

section such partial adhesions as might reasonably be supposed to have arisen from inflammation at some former period."

Apart from these considerations, there can be no question about the amount of mechanical impediment to movement that may be produced by extra-articular inflammation. If we consider the amount and character of the effusion that takes place after some sprains and injuries, in some gouty and rheumatic affections, and in some cases of suppuration occurring in bursa or beneath deep fascia, we cannot doubt that such effusion may easily assume forms in which it will tie down muscles, tendons, or even articular extremities themselves.

If we return to the consideration of the phenomena of iritis, we shall find that the adhesions of the pupillary margin may sometimes be broken, or so stretched as to become innocuous, by the persistent use of atropine; but that when they resist this treatment, modern surgeons break them mechanically, by introducing a hook or forceps into the eye and employing the necessary traction. I

think that the use of gentle or gradually increasing passive movements of partially fixed joints is fairly comparable to the use of atropine ; and that the sudden rupture of articular adhesions is fairly comparable to the operation of corelysis.

In my own early endeavours to overcome impediments to articular motion, I fell, not unnaturally, into the error of not using sufficient force to overcome the resistance. I was too tender in my handling, because possessed by a perfectly groundless fear of exciting inflammatory action. Mr. Hutton has often told me that he had never seen inflammation follow his manipulations ; and although it is very possible that some persons in whom it did follow may have kept away from him, I have no hesitation in saying that it is not to be feared as a result of forcibly overcoming the kind of restraints to motion that I have been considering. Such restraints would be present in greater or lesser degree in the first four of the classes of cases that I have set down ; although in the fourth class, the gouty and rheumatic joints, there would often be such other changes as to

render the treatment by movement of only limited utility. Cases of displaced cartilage, too, would often be attended by voluntary restraint of movement for fear of pain, and hence by the formation of some kind of adhesion; and then manipulation might effect the double purpose of breaking the adhesion and of rectifying the displacement.

Ganglionic swellings about the carpus are commonly attended with pain and weakness of the joint. Their occasional stony hardness induces bone-setters to look upon them as displaced bones; even if told better, they are unable to entertain the idea that a bag of fluid can give such a sensation to the touch; and when ganglia disappear from under the thumb, from the pressure and flexion employed, it is easily believed that a bone has slipped into its place.

Subluxations of carpal and tarsal bones must occur, I think, in a considerable number of instances. I mean by subluxation some disturbance of the proper relations of a bone, without absolute displacement; and I believe that such disturbance may be produced either by the traction of a band

of adhesion about the joints, or by a twist or other direct violence. I see no other explanation, for example, of Mr. Ponsonby's account of the accident that happened to him after the first manipulation. It seems clear that in the first instance the artificial position so long maintained had given rise to some kind of adhesion about the tarsus, the exact spot where pain was so acute being over the upper portion of the calcaneo-cuboid articulation, and that this adhesion was broken through and the foot restored to freedom. But the lameness that was soon after produced by over-exertion, and that was immediately removed by manipulation, must surely have been due to some change in the relations or apposition of the articular surfaces.

Displacement of a tendon is certainly of more frequent occurrence than is usually supposed; and, excluding several cases where the symptoms were unmistakable, I have seen numerous others operated upon in which the alteration in the appearance of the joint immediately afterwards could only be accounted for by this explanation of the injury. Mr. Paget refers to this accident

in his lecture already quoted; and Mr. Curling has published the following interesting case:—

"A young gentleman, about twenty-one years of age, in May last met with an accident in jumping, by his left foot slipping on a stone and turning outwards. He felt considerable pain in the ankle, became lame, and sensible of something being wrong. On taking off his boot, he found a projecting cord at the outer and front part of the ankle; this he easily pressed back, with instantaneous relief. In the course of the following week, the displacement recurred twice; and the patient sent for Mr. Bailey, a surgeon at Wansford, who at once ascertained the case to be a dislocation of the tendon of the peroneus longus muscle. He applied an angular piece of cork to the margin of the fibula, so as to prevent the tendon from slipping over it; and confined this with a bandage. A few days afterwards, the patient called on me, when I found the tendon in its usual site, rather more prominent than usual. The cork pad was re-applied, and kept in place with strapping and a bandage; and walking

exercise forbidden. After a few weeks, I had a laced-up ankle-support, with a pad to fit behind the fibula, made; and he was then allowed to move about, and he shortly returned into the country. He paid me a visit in December, seven months after the accident. He stated that the tendon had kept in place; but he occasionally felt a weakness in the part, and a sensation as if the sinew was not secure, especially in walking on rough ground. He was about to emigrate to Australia. I recommended his continuing to wear the laced-up sock and pad for some years.

"Dislocation of the peroneus longus tendon is so rare an accident, that the particulars of a case are worthy of record. Two or three of my professional friends state that they have met with it, but I have no recollection of having read any account of it in books. The nature of the case can readily be recognized, and the tendon can be easily replaced behind the fibula. The great difficulty is to keep it there after rupture of the sheath, as the tendon so readily slips forward in the movements of the foot, which at once gives

rise to lameness. This has caused so much annoyance, that it has been proposed to divide the tendon subcutaneously. In the above case, the tendon had been retained in place many months by great care on the part of the patient, who fully appreciated the difficulty of the treatment, and never moved about without the support of the bandage."

In the instances that I have myself seen, the tendency to recurrence of the displacement has not been present in anything like the degree that is here described; but the difference might depend partly upon the extent to which the sheath had been torn; and partly upon the character of the reparative process.

The cases of "hysterical joints" that come before bone-setters are probably numerous, and for the most part are likely to have been long under medical treatment. In some of them there may be conscious imposture which the patient is weary of, and wishful of an excuse to lay aside; in others the nature of the treatment and the attendant circumstances may effect a cure by their

operation upon the mind ; in others again, I think, the originally hysterical affection has brought after it an actual malady. Mr. Skey describes a hysterical joint in the following words :—

"You will find, on the occasion of your first visit, the patient walking lame. This lameness has existed for several days, probably weeks, before attention has been attracted to it, and has come on very gradually. The joint is stiff—not that it will not bend, but the movement is painful. There may be increased heat in the joint when compared with that of the opposite limb, but not much in degree. The knee is slightly swollen. If you see the case after treatment has commenced—*i. e.* after the repeated application of leeches, blisters, and tincture of iodine (the almost universal agent in difficulty)—the swelling will be palpable, and the outline of the joint has undergone a change."

The same author also says :—

"In the course of last year I was consulted by the family of a young lady, eighteen years of age, living at a distance from London, relative to an

affection of the knee, from which she had been suffering for a period of ten months. The joint was stiff and painful; she moved about on crutches; there was no considerable amount of heat, and what alteration existed in the form and outline of the knee was due to the activity of the past treatment; the tissues had lost their natural softness and flexibility; the joint had been repeatedly leeched and blistered, and subjected to the application of liniments in variety of colour and composition; an issue had been made on the inner side of the patella, which, judging from the cicatrix it left behind, had not been a small one, and the curative influence of which had not been discoverable during four months, at the expiration of which nature was allowed to heal it."

If we carefully consider this description, and admit, as I fear we must, that it has been verified in innumerable instances, I think we shall also be driven to the conclusion that adhesive inflammation in or around a joint may very well have been excited by the combined effects of rest and of counter-irritation, and that the art of the bone-

setter may have been the precise thing that was required to remedy, not the original nervous malady, but the prejudicial effects of treatment. We have abundant evidence that even an ordinary blister will at times excite inflammation in a subjacent serous cavity; such as the pleura or the pericardium; and I see no reason to doubt that it will do the same in the cavity of a joint; causing adhesions which may sometimes yield to the gradual traction produced by efforts to resume ordinary movement, but which may sometimes require to be torn through by sudden flexion.

In my original papers on this subject in the *Lancet*, I said that acute articular disease must be excluded from the class of cases in which the movements practised by bone-setters could be useful. There is, however, a period at which this statement ceases to hold good; and in which timely movement may prevent the occurrence of permanent adhesion. I have met with a narrative of two cases, published by Mr. Carter in the third volume of the *London Hospital Reports*, by which this is particularly well illustrated; so much so,

indeed, that I have thought it worth while to transcribe them. They are entitled

*Two cases of Acute Suppuration in Knee-joint, in which recovery with free motion ensued.*

"H. C——, a coal miner, in the prime of life, and remarkable among his fellow-workmen for his great strength and endurance, received a blow upon his left knee, by the falling of some masses of stone from the roof of the stall in which he worked. Notwithstanding severe pain, he continued to labour until his usual hour; and then walked a mile and a half to his home. On arriving there, he went to bed, and enveloped the injured joint in mustard poultices. The next day I was asked to see him.

"It is not remarkable that a joint thus injured, and thus ingeniously maltreated after the injury, became the seat of inflammation; nor that, when the inflammation had somewhat subsided, the articular cavity was left much distended by fluid.

"In due time, an exploratory puncture showed the contained fluid to be pus; and it was evacuated

by a free incision into the joint, in the direction of the axis of the limb, and just external to the outer border of the patella. The pressure of the distended joint upon the veins had produced considerable œdema of the leg; and, on this account, it seemed desirable to obtain firm and accurate mechanical support for the leg, as well as immobility of the articulation. For these purposes the following contrivance was employed :—

"A splint, as light and thin as was consistent with the necessary strength, was cut from a flat piece of deal. This splint was long enough to reach from the tuber ischii to the os calcis. At the upper end it was about three inches in width, and it gradually tapered to an inch and a half at the lower end; so that, when in position, it was everywhere overlapped by the limb. It was padded by two or three strips of blanketing, and by a little cushion to fill the ham; and it was secured upon the centre-piece of a many-tailed bandage. This centre-piece was somewhat longer than the splint, so as to turn round the heel, and reach along the sole of the foot to the root of

the toes. The tails were rolled up and tacked to two pieces of tape, and the whole apparatus so fastened together that it could be put into its place by once elevating the limb. The heel and malleoli were then protected by strips of soft leather, spread with lead plaster; the splint was placed in position, and the leg gently lowered down to rest upon it. The pad under the ham was accurately adjusted, a little cotton-wool placed to fill up any hollows, and then the tails of the bandage were laid down firmly and closely from the toes upwards, and thoroughly secured by starch. Opposite the knee-joint two tails on each side were left unstarched; but the starch was again applied above. The unstarched tails were pinned, so that they could be opened to renew some charpie, placed over the wound to absorb the discharge. As soon as the starch had hardened, the limb was slung by tapes from a common cradle, so as to move freely from the acetabulum, and to allow the patient to lie in almost any position.

"After a few days the subsidence of œdema

loosened the bandage. It was then carefully cut through on both sides of the limb, and the whole dressing removed and re-applied with the smallest possible movement or disturbance.

"The discharge from the joint, at first purulent and profuse, gradually became serous and scanty. After a time it formed a scab, by which the wound was completely sealed. I expected no better result than anchylosis, and when the scab fell and disclosed a firm cicatrix I removed the splint and bandage, and left the patient in bed. On visiting him the next day he was up and dressed, sitting in a chair with both knees bent in the ordinary manner. He said that a stiff leg would cripple him as a miner, that he determined to try and bend his knee, and that the attempt succeeded. No bad symptoms followed, and he soon returned to his work. He remained under my observation for more than two years; and the joint that suppurated was in every respect as strong, as flexible, and as useful as the other.

"With the preceding case fresh in my recollection, I was asked by the late Mr. Fox of

Nottingham to visit for him a pauper patient who lived near my own house. I found a young woman, the daughter of parents in easy circumstances, but who had been seduced, and had left her home in consequence. She had earned a scanty subsistence by needle-work; and, when I saw her, she had been three weeks delivered of a puny infant, that died shortly afterwards.

"A few days after her confinement, her right knee-joint became inflamed. I found her with the joint much distended and pointing, in a high degree of irritative fever, half-starved, and thoroughly miserable. Mr. Fox was kind enough to surrender her entirely to my care, and to furnish me with orders to the relieving officer for everything that her case required.

"A free incision into the joint gave exit to a large quantity of pus, and to masses of pus clot, some of which were so large that they required to be eased through the wound. After the incision, the splint and bandage already described were carefully applied.

"On account of the unfavourable condition of

the patient, it was manifest that a good result could only be obtained by extreme care; and, living near, I availed myself of the proximity to superintend the nursing. For many weeks I took charge of the affected limb during every change of bedding, clothing, or position. The case was much more protracted than the former one; but its course was in all essentials the same. The purulent discharge became serous, and the wound was sealed, after a time, by a scab, under which it united firmly. When this scab fell, gentle passive motion was carefully employed. It was followed by increased heat of the joint; and this heat was subdued by irrigation with cold water. By slow degrees, free movement was obtained; but, for many months, increased heat was produced by any undue exertion, and sometimes by atmospheric change. Cold water was always effectual as a remedy, strength was gradually gained; and, after the lapse of a year, the patient was able to say that nothing remained, save the cicatrix of the incision, by which she could distinguish the joint that had been inflamed from its

fellow. I saw her at intervals for nearly three years, and her condition underwent no change."

Regarding these cases by the light of my own experience, I cannot avoid the conclusion that in the former of them, if the patient had lain still with a straight limb, permanent and probably irremediable anchylosis would have been produced by the firm adhesion of the opposed articular surfaces. By rising, and bending the knee completely and with decision, the patient ruptured every impediment to motion, and was at once cured. In the second case, if Mr. Carter had proceeded in a similar manner, he would probably have brought about a similar result. Instead of this, he proceeded, as he thought, more cautiously. Instead of at once rupturing the adhesions, he stretched them a little while they were still yielding, and produced pain and heat by the traction upon their attachments. When the pain and heat had subsided, the same process was repeated with the same consequence ; and, as it fortunately befell, the adhesions were thus in time either broken

through, or so stretched that they were no longer impediments to motion. Every one of the gentle attempts at passive movement was probably quite as dangerous as, while it was far less efficacious than, the single complete flexion that would have overcome the difficulty in a moment. Allowing this, the successful issue even of the second case is of great interest, and may well make us inquire how many of the limbs that have been left to undergo anchylosis might have been saved from that condition by timely movement.

Upon the whole, then, I think it is tolerably clear that the success of the bone-setter rests, in point of fact, upon the frequent occurrence of what may be called a minor degree of false anchylosis, variously produced, and perhaps located in different natural or adventitious structures.

While pronounced degrees of false anchylosis have long been recognized, and have lately, in an increasing number of cases, been successfully broken through, the minor degrees seem to have almost entirely escaped observation; and it is worthy of remark, that their partial character has

probably served to disguise their nature, and to cause them to be mistaken for more active forms of articular disease. A complete false anchylosis almost entirely *prevents* movement; while an adhesion that only *checks* movement will be a constant source of injurious strain upon the structures of the joint, and will be liable again and again to set up acute irritation. It seems, therefore, in the highest degree important that these single or partial adhesions should be fully recognized by the profession; and that it should no longer be left to unauthorized practitioners to treat them successfully after surgeons have failed to do so. For their ready recognition I think two chief indications are fully sufficient, when once attention has been drawn to their occurrence. A slight degree of mobility, checked by pain, and accompanied by a spot tender on pressure, is sufficient, in the absence of any evidence of acute disease, to justify manipulation having for its object the breaking down of adhesions. The chief lesson, however, which these cases should teach is the desirableness of so treating the original malady

as to prevent adhesions from being formed. To this part of the subject I shall return in a future chapter.

Not less important than the pathology of the conditions in which motion will be successful, is that of the conditions in which it would certainly or probably be injurious; and any surgeon who attempts to deal with instances of partial adhesion in the manner I am about to describe, can hardly exercise too much caution in the selection of his cases, and in the exclusion of those in which any mischief would be likely to ensue.

It is well known that bone-setters often inflict serious injury upon their patients; but I believe this can only happen when they overlook the presence of conditions which a surgeon ought at once to recognize.

Mr. Paget, in his lecture already quoted, relates an instance in which a recent fracture of the fore-arm was moved about by a bone-setter; and Mr. Prall, of West Malling, has communicated to the *Lancet* two cases, one of which is described as having been inflammation at the ankle-joint, the

other as hip-joint disease; in both of which, movements effected by a bone-setter were followed by suppuration and death. Mr. Prall's communication would have been more valuable, if he had described the original maladies of these patients with greater precision, and especially if he had told us whether the symptoms in either case were such as to render the diagnosis at all doubtful. For although, in the hands of a quack, it is inevitable that errors must be committed in the application of any treatment, and that these errors must be followed by a certain proportion of disastrous results; yet it is surely unnecessary to warn professional readers against disturbing a case of manifest acute intra-capsular disease. The only warning required by them would be against errors of diagnosis in doubtful cases; and even these need scarcely ever be committed. In cases that can be cured by movement, the application of the treatment can never be very urgent in point of time; and may always therefore be delayed for time to clear up any point that appears to be obscure. The mischief now done by bone-setters,

or rather by the attitude of some members of the profession towards their methods, is, that patients are cured by them whom legitimate surgeons have failed to cure or have pronounced incurable, and hence the confidence of the public in surgery is rudely and unnecessarily shaken. If surgeons would only give proof of their knowledge of the good that bone-setters accomplish, the public would then be ready to listen to any reasonable warnings about the harm, and would be equally ready to submit to any precautions by which this harm might be reduced to the smallest possible quantity. A practitioner who said, "This joint might probably be cured at once by a sharp movement, but before moving it I should like to wait until assured of being able to do so with perfect safety," would generally retain both the confidence of the patient and the care of the limb. He would, at all events, not lose his reputation, even if a bone-setter should intervene successfully; and at the worst could only be accused of having exercised over-caution. But the cures effected by bone-setters have been far too real and too striking to

be ignored; and hence a practitioner who shuts his eyes to them, or who imagines that they can be rendered non-existent by a sort of set-off of mistakes, will find to his cost that he will every now and then lose, not only an important patient whose cure will be effected in direct contravention of all the surgical treatment to which he had previously been subjected, but that he will also, and in a very serious manner, lose credit generally in his locality, or among the class to which his patient belongs. Such a case as that of Mr. Ponsonby would not only foster the practice of bone-setting all over the kingdom, but it would also promote the success of every kind of quackery in the circles in which he moves. Errors of opinion and of treatment that the event renders only too manifest, and that are committed by qualified surgeons of high reputation, can hardly fail to lead those who are not very profound thinkers to the belief that equally grave errors are as likely to be committed in other departments of practice.

It would be wholly foreign to the scope of this treatise to enter at any length into the diagnostic

signs of those diseases of joints for which movements are either directly contra-indicated or would be especially hazardous. The symptoms which denote acute synovitis or ulceration of cartilage will generally be as unmistakeable as those of fracture; and, as already suggested, must in any case be cleared up by time.

The necessity for the exercise of great caution will be most conspicuous when there is any evidence of either local or constitutional struma; and although, as Mr. Barwell has shown, the fact that the disease is strumous does not afford any reason why the adhesions left by it should not eventually be broken, yet it does afford a reason for treating the patient with extreme caution, and for obtaining certainty that we do not stir smouldering embers into flame.

The most noted successes of bone-setters have been obtained on patients past the age at which struma shows itself actively; and it is probable that their most disastrous results have been in the young. A marked elevation of the temperature of a joint, and the existence of pain when its articular

surfaces are gently pressed together, without any other disturbance of their relations, would both be signs before which the careful surgeon would hold his hand; and beyond this it is difficult to say more than that every case must be carefully studied with due regard to its history, its symptoms, and the constitutional conditions with which it is associated. The presence of the specific deposits of gout, for example, would make the adhesions left behind by inflammation less tractable, and the inflammation more liable to be re-excited, than if it had been the result of rheumatism, of injury, or of non-specific irritation; and in these joint cases, as in all others, he will be the most successful who most carefully weighs all the elements of the problem with which he is called upon to deal. It is only in this way, indeed, that the random successes of the bone-setter can be replaced by the proper and legitimate results of the scientific surgeon.

## CHAPTER III.

### MANIPULATIONS.

THE methods of handling employed by bone-setters, and the way in which they proceed to bring about their cures, have hitherto been matters only of speculation for surgeons, and have been surrounded with very unnecessary mystery by the imaginative narratives of patients. Mr. Paget says, for example, "Bone-setters violently move the joints, against the resistance of muscles, until the latter are wearied and beaten;" and the late Mr. Charles Waterton, the eminent naturalist, has written an account of his own treatment which I may be pardoned for believing to be exaggerated, and which is certainly well calculated to impress the mind of the unprofessional reader.

This description I proceed to quote; and I am

sure that what I have afterwards to say, in the way of an unvarnished version of what is required to be done, cannot seem otherwise than flat by comparison. Mr. Waterton says :—

"Before I close these memoranda, I have to describe another mishap of a very dark complexion. Let me crave the reader's leave to pen down a few remarks on bone-setting, practised by men called bone-setters, who, on account of the extraordinary advance in the art of surgery, are not now, I fear, held in sufficient estimation amongst the higher orders of society. Every country in Europe, so far as I know to the contrary, has its bone-setter, independent of the surgeon. In *Johnson's Dictionary*, under the article 'Bone-setting,' we read that a Sir John Denham exclaimed, 'Give me a good bone-setter!' In Spain the bone-setter goes under the significant denomination of Algebrista. Here in England, however, the vast increase of practitioners in the art of surgery appears to have placed the old original bone-setter in the shade; and I myself, in many instances, have heard this most useful

member of society designated as a mere quack; but most unjustly so, because a quack is generally considered as one devoid of professional education, and he is too apt to deal in spurious medicines. But not so the bone-setter, whose extensive and almost incessant practice makes ample amends for the loss of anything that he might have acquired, by attending a regular course of lectures, or by culling the essence of abstruse and scientific publications. With him theory seems to be a mere trifle. Practice—daily and assiduous practice —is what renders him so successful in the most complicated cases. By the way in which you put your foot to the ground, by the manner in which you handle an object, the bone-setter, through the mere faculty of his sight, oftentimes without even touching the injured part, will tell you where the ailment lies. Those only who have personally experienced the skill of the bone-setter can form a true estimation of his merit in managing fractures and reducing dislocations. Further than this, his services in the healing and restorative art would never be looked for. This last is entirely the

province of Galen and his numerous family of practitioners. Wherefore, at the time that I unequivocally avow to have the uttermost respect for the noble art of surgery in all its ramifications, I venture to reserve to myself the following (without any disparagement to the learned body of gentlemen who profess it) sincere esteem for the old practitioners who do so much for the public good amongst the lower orders, under the denomination of British bone-setters. Many people have complained to me of the rude treatment they have experienced at the hands of the bone-setter; but let these complainants bear in mind that, what has been undone by force, must absolutely be replaced by force; and that gentle and emollient applications, although essentially necessary in the commencement, and also in the continuation of the treatment, would ultimately be of no avail, without the final application of actual force to the injured parts. Hence the intolerable and excruciating pain on these occasions. The actual state of the accident is to blame—not the operator.

"Towards the close of the year 1850 I had reared a ladder, full seven yards long, against a standard pear-tree, and I mounted nearly to the top of this ladder with a pruning-knife in hand, in order that I might correct an over-grown luxuriance in the tree. Suddenly the ladder swerved in a lateral direction. I adhered to it manfully, myself and the ladder coming simultaneously to the ground with astounding velocity. In our fall I had just time to move my head in a direction that it did not come in contact with the ground; still, as it afterwards turned out, there was a partial concussion of the brain; and add to this, my whole side, from foot to shoulder, felt as though it had been pounded in a mill. In the course of the afternoon I took blood from my arm to the amount of thirty ounces, and followed the affair up the next day with a strong aperient. I believe that, with these necessary precautions, all would have gone right again (saving the arm) had not a second misadventure followed shortly on the heels of the first; and it was of so alarming a nature as to induce

me to take thirty ounces more of blood by the lancet. In order to accommodate the position of my disabled arm, I had put on a Scotch plaid in lieu of my coat, and in it I came to dinner. One day, the plaid having gone wrong on the shoulders, I arose from the chair to rectify it, and the servant, supposing that I was about to retire, unluckily withdrew the chair. Unaware of this act on his part, I came backwards to the ground with an awful shock, and this no doubt caused concussion of the brain to a considerable amount. Symptoms of slowly approaching dissolution now became visible. Having settled all affairs with my solicitor betwixt myself and the world, and with my Father Confessor betwixt myself and my Maker, nothing remained but to receive the final catastrophe with Christian resignation. But though I lay insensible, with hiccups and *subsultus tendinum*, for fifteen long hours, I at last opened my eyes, and gradually arose from my expected ruin.

"I must now say a word or two of the externals damaged by the fall with the ladder. Notwith-

standing the best surgical skill, my arm showed the appearance of stiff and withered deformity at the end of three months from the accident. And now my general state of health was not as it ought to be; for incessant pain prevented sleep, whilst food itself did little good. But my slumbers were strangely affected. I was eternally fighting wild beasts, with a club in one hand, the other being bound up at my breast. Nine bull-dogs one night attacked me on the highroad, some of them having the head of a crocodile. I had now serious thoughts of having the arm amputated. This operation was fully resolved upon when, luckily, the advice of my trusty gamekeeper, John Ogden, rendered it unnecessary. One morning, 'Master,' said he to me, 'I'm sure you're going to the grave. You'll die to a certainty. Let me go for our old bone-setter. He cured me, long ago, and perhaps he can cure you.' It was on the 25th of March, then—*alias* Lady-day, which every Catholic in the universe knows is a solemn festival in the honour of the Blessed Virgin—that I had an interview with Mr.

Joseph Crowther, the well-known bone-setter, whose family has exercised the art, from father to son, time out of mind. On viewing my poor remnant of an arm—'Your wrist,' said he, 'is sorely injured; a callus having formed betwixt the hand and the arm. The elbow is out of joint, and the shoulder somewhat driven forwards. This last affair will prevent your raising the arm to your head. Melancholy look out!' 'But can you cure me, doctor?' said I. 'Yes,' replied he, firmly; 'only let me have my own way.' 'Then take the arm, and with it take elbow, wrist, and shoulder. I here deliver them up to you. Do what you please with them. Pain is no consideration in this case. I dare say I shall have enough of it.' 'You will,' said he, emphatically. This resolute bone-setter, whom I always compared to Chiron the Centaur for his science and his strength, began his operations like a man of business. In fourteen days, by means of potent embrocations, stretching, pulling, twisting, and jerking, he forced the shoulder and the wrist to obey him, and to perform their former healthy movements. The

elbow was a complicated affair. It required greater exertions and greater attention. In fact, it was a job for Hercules himself. Having done the needful to it (*secundum artem*) for one-and-twenty days, he seemed satisfied with the progress which he had made; and he said, quite coolly, 'I'll finish you off this afternoon.' At four o'clock, *post meridian*, his bandages, his plasters, and his wadding having been placed on the table in regular order, he doffed his coat, tucked his shirt above his elbows, and said that 'a glass of ale would do him good.' 'Then I'll have a glass of soda-water with you,' said I; 'and we'll drink each other's health, and success to the undertaking.' The remaining act was one of unmitigated severity: but it was absolutely necessary. My sister, Eliza, foreseeing what was to take place, felt her spirits sinking, and retired to her room. Her maid, Lucy Barnes, bold as a little lioness, said she would see it out; whilst Mr. Harrison, a fine young gentleman who was on a visit to me (and, alas! is since dead in California), was ready in case of need. The bone-

setter performed his part with resolution scarcely to be contemplated, but which was really required under existing circumstances. Laying hold of the crippled arm just above the elbow with one hand, and below with the other, he smashed to atoms by main force the callus which had formed in the dislocated joint; the elbow itself cracking, as though the interior parts of it had consisted of tobacco-pipe shanks. Having pre-determined in my mind not to open my mouth, or to make any stir during the operation, I remained passive and silent whilst this fierce elbow-contest was raging. All being now effected, as far as force and skill were concerned, the remainder became a mere work of time. So putting a five-pound note, by way of extra fee, into this sturdy operator's hand, the binding up of the now rectified elbow-joint was effected by him, with a nicety and a knowledge truly astonishing. Health soon resumed her ancient right; sleep went hand in hand with a quiet mind; life was once more worth enjoying and here I am, just now sound as an acorn."

After this graphic, and yet somewhat vague as

well as alarming description, it will sound prosaic to describe what the processes really are. After having satisfied oneself by examination and inquiry that a given case is suited for the treatment, the first step is to feel all round the affected joint for a spot that is painful on pressure, and in all subsequent manipulations to be careful to fix this painful spot by firm pressure with a thumb. It may be found anywhere about a joint, but more frequently on the inner than the outer aspect; and in each joint it has its most frequent situation —in the hip, over the head of the femur; about the centre of the groin; in the knee, at the lower edge of the internal condyle; in the elbow, over the internal condyle of the humerus; at the wrist, over the scaphoid or semilunar bone; and so on. The painful spot being discovered, the limb must be steadied on the proximal, and grasped on the distal, side of the affected joint, the thumb pressure applied to the seat of pain, and the joint sharply flexed, or flexed and extended, sometimes also abducted or adducted, as the case may be. The direction of movement must depend mainly upon

the direction of resistance—a principle which presents itself to the mind of a bone-setter in the shape of the maxim that "a joint must be put in the reverse way to what it has been put out." The resistance of muscles is overcome, or at least reduced to a minimum, by rotating the limb below the joint as much as possible on its axis. In this way the muscles are thrown out of their ordinary lines of action, and are rendered almost powerless. Mr. Paget, as already quoted, says, "Bone-setters violently move the joints against the muscular resistance until the muscles are wearied and beaten." As far as Mr. Hutton was concerned, this description is not founded upon fact, for he by his rotation manœuvre simply evaded muscular resistance, and his manipulations were never so prolonged that muscles could be "wearied and beaten." The force, moreover, was applied in a perfectly definite way, for the attainment of a definite end, and ceased as soon as that end was arrived at. There was no objectless movement hither and thither; but only a movement every step of which was considered and planned before-

hand, like the movements of a surgeon in the reduction of an actual displacement.

The cases already cited are all instances in which freedom of action was restored by a single operation. This, however, cannot always be accomplished, and the manipulation must sometimes be repeated again and again. In such cases Mr. Hutton attached importance to the production of sensations of tingling in the course of the affected limb, and was not satisfied that he had done all that was in his power until the tingling extended quite to the tips of the fingers or toes. The instances of this kind that I can recall were chiefly of long standing, and consecutive to injury or disease of considerable original severity.

Perhaps the most noteworthy feature of bone-setting is the ingenuity with which the leverage of the limbs themselves is rendered available for the purpose of obtaining the power necessary for the accomplishment of the object, so as to dispense entirely with mechanical appliances. The methods bear to those ordinarily used in anchylosis the same relation that the reduction of a dislocated

hip by simple manipulation bears to its reduction by pulleys; and here, I think, surgery may obtain useful hints. It is also noteworthy, that little or no use is made of extension. Mr. Hutton used to say, "Pulling is of little use: the twist is the thing." And I have no doubt that this method of evading muscular resistance might be made very extensively useful. The precise manner of applying it to each joint can only be rendered fully intelligible by the aid of figures; and I enter upon this part of the subject in the following chapter.

## CHAPTER IV.

### MANIPULATIONS (*continued*).

In the rupture of adhesions by manipulation, the first principles by which the operator should be guided are—to obtain sufficient firmness of grasp, sufficient leverage to apply the necessary force suddenly, and to apply it generally, in the first instance, in the direction of flexion, before any attempt is made to restore other movements. In their application to individual joints, these principles require certain modifications of detail, to each of which attention may next be directed.

The thumb and fingers frequently require to be made the subjects of treatment. Their several articulations, and especially those of the thumb, are much exposed to injuries (*e.g.* by a blow from a cricket-ball, or in efforts to save oneself

from falling), and these injuries are often treated by rest. When the thumb is the part injured, and surgical advice is sought, it is not uncommon for a splint to be put on and for iodine to be applied externally as soon as inflammatory symptoms have subsided. Sometimes, however, the rest is merely in obedience to the instincts of the patient; but, in whatever way produced, it will, in a certain proportion of cases, be followed by painful restriction of mobility. In such cases the mode of procedure is as follows:—

Supposing that an articulation between the two phalanges is the one affected, the operator grasps the proximal phalanx firmly between the forefinger and thumb of his left hand, placing the second phalanx of his forefinger on the palmar aspect of the patient's finger, and directly transverse in relation to it, and his thumb on the dorsal aspect. In this position the forefinger of the operator furnishes a steady fulcrum. The phalanx on the distal side of the joint is then grasped by the forefinger and thumb of the right hand, and the joint is sharply flexed to

the full extent that the fulcrum finger will allow. It is then with a continuous movement brought back to a state of half flexion, and in that position is abducted, and then adducted, to the limited natural extent of these movements in a healthy joint. It is then straightened, and the momentary operation is complete. The patient, in a properly selected case, will immediately be able to flex and extend the joint without pain, and must be encouraged to bring it into moderate use immediately. It is quite plain that to keep it still at rest, or to put it upon a splint, would be to allow the adhesions to re-unite, and all the former troubles to be restored.

The metacarpo-phalangeal articulations are treated precisely as the phalangeal, with the single difference that the larger size of the proximal bone enables the operator to grasp it with the tips of two fingers on the palmar aspect, while its relation to its fellows renders the forefinger unavailable as a transverse fulcrum. The natural movements of abduction and adduc-

tion are also more extensive. In some cases we may place the left thumb on the palmar aspect of the head of the metacarpal bone implicated, steadying the whole metacarpus with the fingers, and may then push over the finger to extreme flexion, by placing the right thumb on the dorsal aspect of the first phalanx and employing the necessary force. In these small joints the practice of exerting thumb-pressure upon a painful spot is not generally available, as the painful spot is not always present. Indeed, it seems likely that the arrest of mobility may often be due to effusions in the sheaths of the tendons rather than to changes in the structures which compose the joint.

Proceeding to the wrist, however, the thumb-pressure becomes important; and here it probably enables the operator to fix the proximal attachment of an adhesion. The manner of manipulating is displayed in Fig. 1. The operator, as here shown, standing by the side of the patient, whose hand and fore-arm are prone, grasps the carpal extremities of the radius and ulna firmly

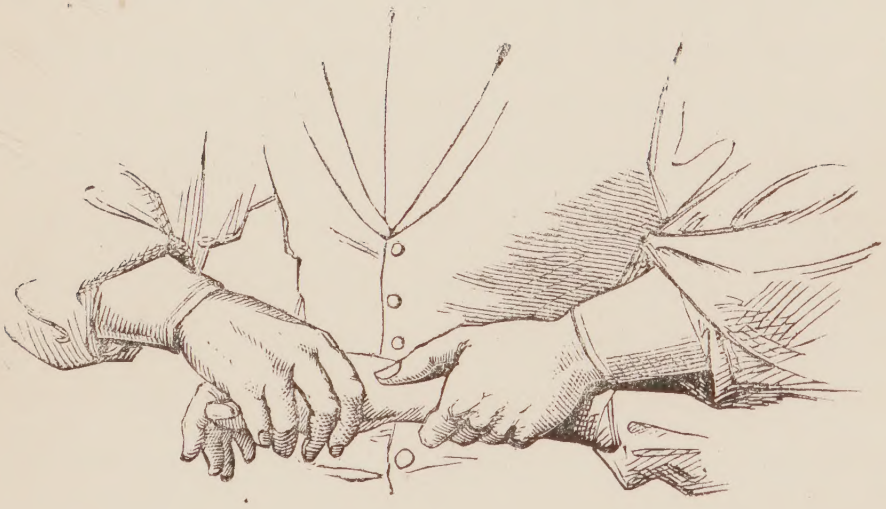

FIG. 1.

with the left hand, and places his thumb upon the tender spot. He then encloses the thumb and metacarpus in the right hand, exerts steady traction, impresses slight rotation upon the hand by turning one of its margins downwards while the radius is kept fixed, presses very firmly with his left thumb, sharply flexes the wrist-joint to the full extent, and as sharply brings the hand up again to complete extension; the fore-arm having been all the while immoveable.

In this manœuvre the importance of the thumb-pressure is manifest; for, as the proximal attachment of an adhesion may be to one of the bones of the carpus, it would be quite possible that the bone itself, unless supported from without, might be dislocated from its position by the force employed. With the aid of pressure, however, such an accident could hardly happen, and the adventitious structure is compelled to yield.

In the case of the elbow-joint, the first care of the operator is to discover in what direction movement is most painful. For this purpose,

the arm and fore-arm being each firmly grasped, he makes an effort at flexion with the hand carried towards the median line, and again with it carried outwards in the opposite direction. He inquires which movement is most painful, and where the pain is felt. The operator and patient then seat themselves, with the corner of a table between them ; and the operator, placing the back of his left hand on the table, receives the elbow-joint in his palm and grasps it firmly, as shown in Fig. 2, at the same time placing the left thumb steadily on the seat of pain. He then grasps the wrist with his right hand. If the most painful movement was flexion with adduction, he twists the palm of the hand towards the median line and flexes the elbow sharply, at the same time bringing the hand across the chest. If flexion with abduction was most painful, the palm is twisted outwards, and the fore-arm carried into the position marked by dotted lines in the figure. In many cases both these manœuvres would be performed, the thumb-pressure being shifted to the spot especially

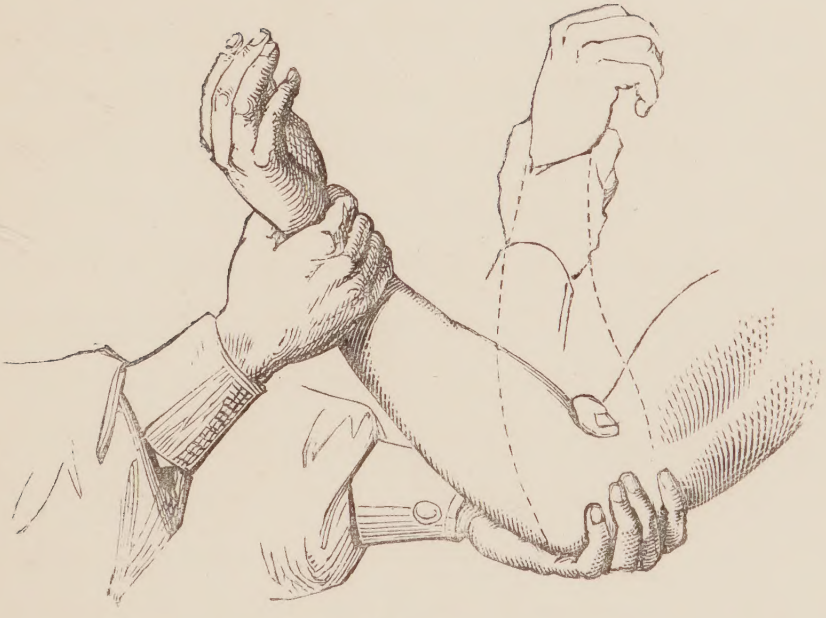

FIG. 2.

painful in relation to each; and, lastly, complete extension and rotation would be made. (The table on which the left hand of the operator should rest has been accidentally omitted in the drawing.)

For the shoulder, the principle of action is entirely the same; and the relative positions of operator and patient are shown in Fig. 3, which also very well illustrates the most usual point for thumb-pressure. The dotted lines show the positions into which it is necessary to move the arm frequently in quick succession, but always first in the direction in which movement is most painful.

Proceeding to the consideration of the adhesions about the ankle-joint or foot, the method of grasping the limb for rupturing them is shown in Fig. 4, which seems hardly to need any kind of explanation. The proximal side of the affected joint being firmly held, and the thumb-pressure made in the ordinary way, the tarsus is so grasped as to give the greatest attainable leverage, the foot twisted a

little inwards or outwards, then sharply bent up upon the leg, and again straightened. As a rule, it is desirable to execute this manœuvre twice—once with an inward, and once with an outward twist, and also to take care that the movements of the joint are free in all directions. In order to secure this freedom the shortness of the lever renders it especially necessary that the movements should be quick, or almost sudden, in their character, so that they may the more certainly rupture, and not stretch, any adventitious impediment to motion.

The method of bending the knee-joint is shown in Fig. 5, and requires rather more assistance from description. In the first place, the operator grasps the heel of the patient between his knees, the inner condyles resting on the sides of the calcaneum below the malleoli, and receives the foot between the adductor muscles of the thighs, so as to grasp its whole length. In this position the foot serves as a lever by which to rotate the leg almost without assistance from the hands, which grasp it just below the knee-joint and

FIG. 3.

with a thumb as usual upon the painful spot. The operator then rotates the leg by a lateral movement of his thighs, and the next instant flexes it by a consentaneous movement of thighs and hands together. It is manifest that this movement can only carry flexion to a certain point, and as soon as this limit is reached the operator relinquishes his original grasp, places his right fore-arm (near the wrist) under the knee as a fulcrum, grasps the leg near the ankle with the left hand, and flexes it to the full extent. The first part of the procedure will serve to overcome the most important resistance; while the last completes the liberation thus commenced.

In dealing with the hip-joint, the leverage afforded by the length of the limb is used by bone-setters with great ingenuity, and in the manner shown in Fig. 6. The twist being given by the grasp of the operator's hands, the flexion is accomplished, and with almost irresistible force, by raising his body so as to bring the patient's limb into the position of the dotted

lines. When this position is reached, the right or left hand, according to the limb, is shifted down so as to make pressure upon any painful spot in the groin while the flexion is completed. In this way the pelvis of the patient is fixed to the couch; and any tilting of his body upwards is prevented. As with other joints, the twist should be made in the direction in which it is most painful; and, if the limb is elongated, it should be carried outwards from the median line—if shortened, inwards, during the act of flexion.

In executing these various manipulations the chief thing necessary is for the operator to have confidence and to exert sharply and instantaneously the full leverage given to him by the limbs. If he attempt to move them slowly he will probably, in many cases, stop short of doing good—that is to say, of rupturing adhesions; being deterred either by the resistance that he feels or by the pain complained of by the patient.

It needs no demonstration that a timid operator may easily do mischief by traction upon a joint, which, after all, he fails to relieve, when

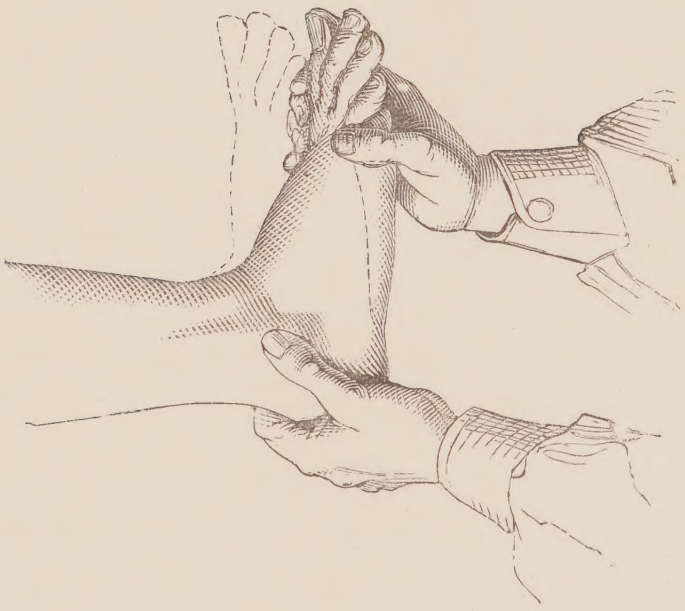

FIG. 4.

a bolder and more rapid movement would at once have set the patient free. I am disposed to think that much of the fear of articular inflammation entertained by surgeons is based, if upon any clinical facts at all, almost entirely upon the results of passive motion of an inefficient kind; sufficient to increase the hurtful traction of an adhesion, but at the same time insufficient for its destruction.

The bone-setter's methods of dealing with the knee and hip-joints serve very well to illustrate what I have already said about the ingenuity of the means by which all mechanical or instrumental aids are dispensed with.

In Mr. Brodhurst's recent admirable work upon deformities, at pages 139 and 141 respectively, there are drawings of the contrivances to which he has had recourse, in cases of false anchylosis of the knee and hip-joints; but although such instruments are sometimes necessary, I think the methods I have described would be sufficient in most cases, and that, whenever sufficient, they would be preferable. They enable the

operator to exert as great a degree of force as would usually be necessary; and to exert it under the constant guidance of muscular sense and consciousness, so that, whatever might happen in the hands of an ignorant person, it ought to be absolutely impossible for a surgeon to inflict any injury upon normal structures. There are also the incidental, if minor, advantages of being independent of any instruments but those with which we are all furnished by nature; so that the patient is saved the loss of time and the cost incidental to the construction of an apparatus, as well as the disquietude of mind likely to be produced by its somewhat formidable aspect when complete.

Still Mr. Brodhurst has been good enough to show me that, by his contrivances, he can deal successfully with cases against which the hands would be powerless, and which, indeed, would be taken for true or bony anchylosis by any but a very practised observer.

At this point it may be interesting to compare the methods above described with those which

FIG. 5.

have been in use in the profession for the purpose of breaking adhesions of a firmer character than those which are of frequent occurrence, and for which the aid of bone-setters is generally sought. Mr. Barwell, in his very practical and useful treatise on "Diseases of the Joints," has devoted a chapter to the restoration of mobility in those that are crippled; and he lays down rules which, if they had been generally followed, would have prevented much suffering to many patients. Neither he nor any other surgeon, as far as I am aware, has ever plainly set forth that slight or partial impediments to motion, after disease or injury, are due to bands that may be easily broken; but the formation and treatment of adhesions in severe cases have been abundantly recognized. Mr. Barwell thus describes the manner of manipulating the shoulder and elbow:—"Let me strongly caution the surgeon against beginning at once to force the arm away from the side in the direction above described, as such procedure is extremely likely to produce dislocation into

the axilla. The first movement must be simple rotation; by bending the elbow at right angles with the humerus and using the fore-arm as a lever, sufficient power is gained, and by grasping the upper arm as high as possible the surgeon can direct the force. Let him not rotate the humerus further outwards than it normally ought to go. When this movement is pretty free, he places the arm in front of the body, and makes it cross the chest, till the elbow lies over the ensiform cartilage; he rotates the humerus a little while in that situation, then places the arm behind the trunk until the elbow lies just above the sacro-iliac synchondrosis, in which situation the humerus is not to be rotated. Having thus loosened the adhesions to a certain degree, the operator holds the acromion and joint with one hand, in the manner previously described, and lifts the arm, as far as it will go, directly in front, *without the use of force*, and commences circumduction, endeavouring to make the arm describe as large a circle as possible; it must be brought to at least a right angle and

FIG. 6.

a half with the body. This amount of elevation is the very least that should satisfy him; and the more he can raise the arm in this circumductory method the better. He will probably require assistance in carrying out these actions, but he should with his own disengaged hand hold the humerus, and govern the movement, and on no account should he allow it to be forced upward directly from the side, or great peril of dislocation will be incurred. During all these manœuvres considerable extension should be made to diminish that risk as much as possible. The hand in the axilla will enable him to judge very accurately of the effects that are being produced.

"More or less immobility of the *elbow-joint* is a frequent result of its inflammation. If the surgeon have convinced himself that there is no true anchylosis, he next must determine which are the contractured parts. It is very rare that the posture during an inflammatory disease of this articulation has been such that the arm is fixed in a straight position; still it is frequently as

much extended as seriously to diminish the use of the hand. In such a case it becomes a question whether or no it will be better to divide the triceps, and the answer must be sought from three circumstances :—the age of the patient, the amount and the duration of the malposture. If the person be under fourteen years of age, if a boy —twelve if a girl—the muscle must be divided, unless the malposition be very slight. In adults, if the arm be fixed at more than 120°, myotomy should be used in cases where the contracture is not more than six months old, and the original disease has been something beyond a slight attack.

"Let us first suppose the muscle is not to be cut: the patient being subjected to the influence of chloroform, the first movement is to be simply rotation, carried, if possible, to the normal extent; the next is to be that which is the opposite of the particular mobility we wish to establish. For instance, if the elbow be too straight, we, desiring to procure flexion, must first straighten it still more, and then flex it. In the same way,

if it be immoveably too much bent, we first bend it still more and then straighten it.

"Some care is necessary in effecting this last change. When the arm is overflexed, the surgeon should grasp the elbow-joint in such a manner as to keep his thumb over the head of the radius and biceps tendon. During the action of extension, which is better performed in a number of jerky actions than by a constant force, the above tendon may become perfectly tense, while the head of the radius does not follow the movement. The attempts at forcible extension must then be discontinued for a while. It may be that increased narcotism will cause sufficient relaxation, and a more careful and gradual mode of procedure will effect the object without injury; whereas a continuance of the same means would be very likely to produce dislocation of the radius. It may be, however, that the biceps tendon must be divided, and it will be far better to perform this little operation than to run any risk of dislocating the radius forwards. In flexing an over-straight arm the surgeon secures a greater

power by placing his knee in the bend of the elbow, but he must take care not to use sufficient pressure to endanger vessels and nerves; usually, indeed, sufficient force is obtained by the use of the hands only. Flexion should be carried so far that the hand can be laid upon the pectoral muscle."

There still remain certain considerations which require attention, some of a general character, and others special to individual articulations.

Among the former, perhaps the most important is the period at which movement may most properly be practised; and this must vary, of course, with the nature of the original malady. In cases of disease, it will be proper to wait until all active mischief has subsided; and this more particularly in strumous subjects; but in cases of injury, we may resort to movement either immediately, or after the lapse of a few days. The former course has long been pursued by my father, Dr. Peter Hood, in the treatment of sprained ankle; and in his hands, and in the hands of others who have followed the practice,

its effect has been simply preventive of nearly all the troubles that such an accident so often entails.

Perhaps the chief lesson to be learnt from bone-setting is, after all, the means of avoiding adhesions; and in order to show how this may be done, I will quote certain passages from my father's pamphlet.[1]

"Ten years have elapsed since I first sprained my ankle. Jumping one morning from the step of an omnibus, I alighted on a loose stone, and my foot turned completely under me. When I mention that my weight at the time was upwards of twelve stone, the amount of injury to the joint can be very well imagined.

"Though I had not far to go to reach the house for which I was bound, I arrived there with great difficulty. The temporary rest of a few minutes there did not alleviate my pain, and I proceeded in a very hobbling manner to my home, a distance of a quarter of a mile. Circum-

[1] *On the Treatment of Sprained Ankle.* By Peter Hood, M.D. [London: Messrs. Churchill, 1858.]

stances compelled me to wear my boot until the middle of the day, when the agony became so great that I was compelled to remove it—a feat which I accomplished with great difficulty. On removing the stocking, I found the foot and ankle were much swelled, and very red; the slightest pressure on the part occasioning acute pain. I at once applied twelve leeches around the joint, and afterwards immersed the foot in water as hot as I could bear, and kept it there for half an hour to encourage the bleeding. I then applied a large warm bread-and-water poultice, and rolled a bandage loosely over the joint. I rested my foot on a chair for the remainder of the day, and on going to bed at night was forced to crawl upstairs on my hands and knees.

"The next day, the pain in my ankle-joint was much diminished; but the instant I attempted to bear my weight upon it, the pain became intolerable. I then applied to the part lint wetted in cold water, and over that oiled silk, *fastening these with a bandage drawn as tight as I*

*could bear it.* To my surprise, I found that the bandaging enabled me at once to put my foot to the ground, and eased the pain considerably; so much so, indeed, that by careful management I was able to go and see a few of my patients. Towards evening, however, the old torture returned; but as I attributed this to over-exercise of the joint during the day, I merely rested it, and continued the water-dressing.

"On stepping out of bed the following morning I felt the pain as acute as ever; the sensation was as if every muscle and ligament had been lacerated, and the attachment of the foot to the bones of the leg loosened. This feeling made me resolve to adopt the following course of treatment—namely, to strap the whole of the foot and ankle over with adhesive plaster, and then cover this with a bandage. To accomplish this, I requested the assistance of a military surgeon living near me, who kindly came at my summons. When he saw my foot, and I had told him the history of its injury, and what I now desired to be done, he at once declined

acceding to my wish, declaring that such a mode of treatment was highly dangerous, and would add greatly to my suffering. I told him that if he refused to strap my foot, I must do it myself. This declaration had the effect of overruling his previous determination. He put the plaster evenly over the foot and ankle, and then applied a bandage moderately tight. I drew on my stocking, and, to my delight and surprise, I was at once able to walk across the room without any pain, and continued so throughout the day as long as I did not twist the foot, but kept it perfectly straight and flat when I placed it on the ground.

"I employed these means for four days, changing the plaster and bandage each morning; and at the end of one week from the time of the injury, I was able to walk as well as I had ever done.

"I used the plaster for a few days longer, and then discontinued it, wearing for a fortnight longer a simple bandage, in the form of the figure 8, bound as tightly round the ankle as it

was convenient for me to bear it. There are always plenty of Job's comforters in the world, and one of them kindly informed me, when he heard of my misfortune, that I should never be entirely free from pain as long as I lived; 'for,' said he, 'I sprained my ankle forty years ago, and I am continually reminded of it whenever there is a change in the weather about to occur, or it is damp,' &c. I did not, however, realize any of his predictions, as, at the end of three weeks from the day I met with the injury, I should not have known any accident had befallen me.

"Five years after this, I sprained the same ankle a second time whilst getting over a stile; and although I did not allow more than an hour to elapse before I attempted to take off my boot, the foot had become so swollen in that interval, that I feared I should not be able to draw it off; and it was only by the ingenuity of a friend who was with me that I succeeded in accomplishing it.

"On reaching London, I adopted the plan of

treatment described above—namely, leeching, poulticing, fomenting, strapping and bandaging; and so effectual and immediate was the relief thence obtained, that I did not find it necessary to remain in the house even one entire day, but visited my patients as usual—sparing my foot, of course, as much as I conveniently could. At the end of five days I was again able to wear a Wellington boot.

"I continued wearing the bandage longer than I had done on the previous occasion, because the swelling and want of tone about the parts were greater, probably on account of the previous injury the joint had sustained. Since then I have never felt any diminution in strength, or pain in the joint, being only from time to time reminded of my accident by slight itching of the skin at the part where the leeches were applied.

"The principles of the practice here recommended as appropriate, in the case of sprains of the ankle-joint, I need hardly say are equally applicable in the treatment of sprains of other joints of the body.

"I have found the treatment, in severe sprains of the knee, as efficacious as I have described it to be in the case of sprains of the ankle-joint."

We may, I think, fairly contrast the results thus obtained with the prolonged pain and weakness which ordinarily follow sprained ankle, and still more with cases in which the usual treatment has, after all, driven the patient to seek relief at the hands of a bone-setter. I append two which may be regarded as typical :—

Mr. J—— sprained his left ankle eighteen weeks before coming under treatment. For the first month he lay on a sofa ; at the end of that time he was able to get about on crutches, and when he presented himself for treatment was compelled to use a couple of sticks. At no time since the injury had he been able to walk farther than two or three hundred yards without resting. He complained of pain on the inner side of the foot, and stiffness and pain in the great toe when he attempted to use the foot. He was operated upon for the purpose of replacing the bone of the foot and overcoming the stiffness of the toe. He

returned home by rail the same day, and, on alighting at the station, walked half a mile slowly to his house. His powers of locomotion steadily improved, and four days after the operation he walked three miles.

Mr. G—— came to Mr. H—— on the recommendation of Mr. J——, and also was induced to do so from the benefit he saw that Mr. J—— had derived from the treatment. In this case the ankle had been sprained and bruised by a horse falling on him a year and a half previous to his visit to Mr. H——. Owing to the road along which he was riding having been much cut up by cart-wheels, his injury was much more severe than would usually occur from this form of accident. When the horse fell, he was not thrown, but went down with it; the injured foot touched the ground, sinking into one of the ruts, when, before he could withdraw it, the animal rolled over, wrenching and bruising the limb most fearfully. The foot when seen by Mr. H—— was still much swollen, and very stiff in all parts. He was considered to have "five bones out," and the

usual manipulations were employed for their reduction. It required three operations, at intervals of a week, before the stiffness of the foot was removed, but at the end of the three weeks he walked as well as he ever did in his life. When he first came he had his foot in a sling suspended from his neck, so utterly useless was the limb.

The advantage of the employment of movement a few days after the receipt of injury is well shown by the history of one of the cases that I saw with Mr. Hutton :—

I. F. (Stanmore) was thrown from a cart by the horse stumbling when going down hill. He fell on his right shoulder, and side of his head. He remained stunned for about an hour ; on coming to himself and trying to rise with the assistance of the right arm, he found himself unable to raise it, much less to bear any weight upon it. He succeeded with great difficulty in getting into his cart (the horse, it appears, did not fall completely, and waited quietly at the side of the road) and driving home. He suffered great pain all night, the arm being perfectly

useless, and the parts about the shoulder much swollen. He saw Mr. H. the following day, and was directed by him to poultice and use neat's-foot oil for a week. At the end of the week he was operated upon. Increased pain followed the operation; it however was not in the same spot, having shifted from the shoulder to the outer side of the arm, near the insertion of the deltoid. No improvement in power of movement occurred at the time; he could not raise his hand to his head or bend his fore-arm. On his next visit, three days afterwards, he said that the pain continued through the night, that he dropped off to sleep towards morning, and when he awoke he found that it had materially abated, and his sufferings had been comparatively slight since. The swelling had diminished, but the motions of the joint were not much freer.

At the expiration of a week from the time of the operation, he appeared again; and he could then place his hand behind his head, and also on the opposite shoulder. With the exception of a slight stiffness, he considered his limb quite well.

It will be observed that, in this case, the incipient adhesions yielded to the application of very trifling force; and many would believe that they might never have become actual impediments to motion, and that rest alone would have brought about recovery. The belief in the great value of rest in such cases may be regarded as a tradition handed down from the time of Sir Astley Cooper, who said: "In no case, after injury, should the patient be allowed to exercise the parts as usual, until all pain has ceased, and the part has nearly regained its original form." The advice thus given has become impressed upon the surgical mind of this country, and has been followed, not always with due discrimination of the conditions under which it is applicable.

It is manifest that there will be certain states of acute disease in joints for which a short period of absolute rest may be required to stop the course of destructive processes; and it is also manifest, that if permanent anchylosis be the result aimed at by the surgeon, rest must be a necessary condition for bringing it about.

But it seems a paradox to assert that prolonged rest can ever be instrumental in restoring the integrity of an organ whose function is movement. How little tendency it has in this direction has already been shown by illustrative cases; and to these I will add one more—the history of which is given in the patient's own words. The narrative may, perhaps, on this account, lose somewhat in surgical precision; but it unquestionably gains more than an equivalent in its graphic and telling character. It is very desirable, too, that surgeons, in these cases, should endeavour to look at the matter in hand from the patient's point of view rather than from their own. The latter is doubtless the easier to themselves; but it is not necessarily the most trustworthy.

"In July 1859, I was playing in the garden with my children, when one of them tossed a large india-rubber ball into the adjoining garden, which was separated from my own by a stone wall about six feet high. I procured a pair of steps and got over the wall; and coming back, I sat for a few minutes on the top of the wall, and then jumped

down, alighting upon the gravel walk. I felt no ill effects from the jump at that time, but, awaking early next morning, I found my left leg very stiff, and supposing that this would pass off I went to business as usual; but on walking I experienced pain on the inside of the knee-joint, which increased during the day, and at night I could scarcely walk. The next morning I sent for my medical adviser (Mr. A——), who, after examining my knee, pronounced the injury to be external to the joint, and I think he said that some cartilage had been strained. He ordered me to pump cold water on it, which I did for several days; but the pain increased and the knee began to swell. Mr. A—— then ordered leeches to be applied, and afterwards a large blister enveloping the knee. After this the leg became very rigid at the joint, and flexed so that the heel would not touch the ground, and I could only move from one room to another by the help of crutches. After about two months' confinement to the house my appetite failed, and I became very unwell. I then saw another surgeon (Mr. B——), who thought that

something was forming in the joint, but that my general health was failing, and that I ought to have change of air, so by his and Mr. A——'s advice I went to the seaside, where I remained until November.

"Whilst there I applied sea-weed poultices, and bathed my knee in warm sea-water; but was soon obliged to discontinue this treatment, as it greatly irritated the joint, which became so tender and painful that I could not bear the weight of the sheet on it as I lay in bed. The flesh of my thigh began to waste away at this time, and I lost power in my left arm, thumb, and forefinger, so that for some time I was unable to use a fork at meals. I called in a local practitioner (Mr. C——), who gave me medicine; but, as he said the pain in the knee was of secondary importance, he did not prescribe for it. I took exercise occasionally in an invalid chair, but, owing to the difficulty of getting downstairs and the vibration of the chair itself, this did me more harm than good. I returned home in November, and passed the winter with very little improvement; and having

purchased a very easy invalid carriage with shafts for a donkey, I went out when the weather permitted. I continued to apply iodine and kept wet cloths constantly upon the limb to keep down the inflammation, and this treatment succeeded in a measure, but only so long as I kept the leg at rest; for on making the smallest attempt to use it the inflammation returned. In the spring of 1860 it was thought advisable that I should consult Sir B. Brodie, and my medical man (Mr. A——) went with me to London; but finding that Sir Benjamin was out of town, he took me to Mr. D——, who affected to treat the matter very lightly, and said that I was to take a tonic, which he prescribed, and that as my health improved my knee would get well. He also sent me to a surgical-bandage maker, who measured me for a knee-cap, which was to enable me to walk and take more exercise than I had hitherto been enabled to do. This knee-cap I was, however, at first unable to wear, until some months later, when, the inflammation having subsided, I found it gave me some support; but

I was never able to wear it without much discomfort. Up to October 1865 (a period of six years and a quarter) I used crutches—sometimes two, at other times one crutch and a stout stick—and was never at ease, the knee always *stone* cold when in bed or otherwise resting, and hot after exertion of any kind—the pain always becoming acute whenever I attempted to use the limb beyond just crossing a room. During this period (six years) I spent a portion of every summer at the seaside, and was withdrawn almost entirely from business. At length, after so long a course of treatment, I ceased to seek further advice, believing what I was told, that the cause of all my suffering was constitutional, and I settled down to the conclusion that I should be a cripple for life, and that this was unavoidable.

"In June 1865, I was recommended by a friend to consult Mr. Hutton, but when I had learned that he was an irregular practitioner, I declined; and it was not until October, when owing to an accidental stumble against the door-sill I was in much pain again, that I acceded to the earnest solicita-

tions of my friends. I then wrote to him, and made an appointment. At the first interview he came to me in the waiting-room, and, looking me hard in the face, he said, 'Who sent you here?' I told him who it was that recommended me to him. He then said, 'Do you know that I am not a regular surgeon?' I answered, 'Yes.' 'Well, then, what's the matter with you?' I told him I was lame. 'Are those your sticks?' pointing to the crutches. 'Yes.' 'Well, let me look at your leg.' He then instantly placed his thumb on the tender spot inside the knee, causing me great pain. I said, 'Yes, that is the place, and no other.' 'Ah,' he replied, 'I thought so. That will do. How long have you been lame?' 'Six years.' 'What treatment have you had?' I told him, and also that I was advised that my lameness resulted from constitutional causes. He said, 'Bah! If you had not had a pretty good constitution, they would have killed you.' I told him that I had seen Mr. D——. 'Well,' he said, 'you might as well have seen my cook. He can't cure that knee.' I asked him what he thought was the matter with it.

He said, 'That knee is out ; I'll stake my reputation on it, and I can cure it.' I was ordered to apply linseed-meal poultices for a week, and then go to him again, which I did, and happily with the best results. I have never needed the use of crutches since, and, although it was some time before I gained much strength in the leg, I am now able to walk as well as before the injury. I forgot to mention, that before leaving Mr. Hutton's house I walked up a flight of stairs and down again without assistance, a feat I had not accomplished for years."

As a contribution to the patient's point of view, and as a pendant to some remarks made in the course of the preceding pages, I have thought it desirable to print here a portion of the letter that accompanied the narrative :—

"*May*, 1871.

"MY DEAR SIR,—In my communication I have confined myself to a relation of facts only, abstaining from all comment, but I should now like to say, that I think you are doing great service to the public in bringing the subject of (so-called) bone-setting prominently before the profession, so as to induce them to give it a measure of attention, instead of pooh-poohing it, as has been their almost invariable practice hitherto. In my own case, after submitting to Mr.

Hutton's manipulation, I was instantly relieved from that pain, tension, and coldness in the joint that I had suffered for six years, and was able to walk. This recovery, which to myself and friends seemed little short of a miracle, was thus accounted for by the faculty:—Mr. A—— (whose patient I had been), on the subject being mentioned to him, laughed, and said, with a significant shrug, 'Yes, yes! a nervous knee! we all know what nervous knees are!—ay! ay!' Mr. B——, who as a friend had seen my knee frequently (though not professionally), assured all who mentioned the case to him that I might have walked twelve months earlier had I cared to do so. Other professional men accounted for the manifest change in my condition on one hypothesis and another, whilst all affected to smile at my ignorance and delusion. Thus much as to the profession: but what were my own thoughts and those of my friends and the public generally? I was like the man spoken of in the Gospels, who had been blind, and could now see. I had been lame and in pain, and could now walk and was at ease. I cared nothing for professional sneers as to nervous or not nervous; and had the whole College of Surgeons clearly demonstrated to their entire satisfaction that I could not possibly have been benefited by Mr. Hutton's treatment, my opinion would not have been in the smallest degree shaken by it. Then, as to the public: my case having been well known, my recovery was quickly noised abroad, and a number of people in the neighbourhood who had 'suffered many things of many physicians and were nothing bettered, but rather grew worse,' sought Mr. Hutton's advice and were cured; and this has happened in so many instances that public confidence in the ability of the regular practitioner to deal with this class of cases has been greatly

shaken. I cannot better illustrate this than by relating the following case :—One Thursday morning last autumn a man came to me, and, on my inquiring his business, he told me that he wanted my advice. He was a labourer in a factory, who, in lifting a weight, had twisted his knee, which was much swollen and painful when he walked. I asked him what advice he had had. He said he had been under the doctor's hands some time, but the leg was worse, and he was now ordered to lay up entirely for a month, and was assured that, unless he did so, he would lose his leg. In one hand he held a medical certificate to entitle him (being unable to work) to go on his club ; in the other he had a lump of dark paste, about the size of an egg, which he said was a blister, and which he was ordered to apply to the joint immediately, and to rest at home until the doctor called on him next day. I examined his knee, and from the similarity of his symptoms to those I had myself experienced, I felt satisfied that his was a case for Mr. Hutton, and told him so. He immediately said that he had heard of my case and so many others *that he would rather take my advice than the doctor's.* I explained to him that he could not follow the advice of both, and if he decided on going to Mr. Hutton he must on no account apply the blister. To this he assented. The doctor's assistant called on him next day, and was very angry that he had not done as he was ordered, and then left, threatening to return with his master, who, he said, would make him put on the blister whether he liked it or not. This threat, however, was not carried out, and on Monday morning he went to Mr. Hutton, with several other patients who were going up on a similar errand. He did not return until the last train at night, and I learned next morning that, after visiting

Mr. Hutton, he walked several miles to see a friend, and then back to the railway-station ; he rested the next day, and on Wednesday returned to his work, and has been quite well ever since.

"The sentence in italics is one to which I desire to call particular attention, since it gives expression to a feeling of want of confidence in the profession, which I know to be widely, though often secretly, entertained in this neighbourhood.

"Would it not, then, be to the interest of the profession to examine into these cases, and not obstinately to close their eyes to facts, which, but for professional prejudice, they would not fail to see as clearly, and reason upon as logically, as common people do.

"I am, my dear Sir, yours very truly,

"&c. &c."

Another joint requiring very special consideration is the hip, on account of its well-known liability to disease of a kind that should forbid operative interference. It may be safely assumed that in any case of mischief about the hip-joint, the mind of a surgeon would be likely to lean towards the probable presence of morbus coxæ, while a bone-setter, on the other hand, would lean towards the opposite view, and would hope and thence believe the malady to be of a kind that movements would

cure. Hence it is that the hip-joint has furnished the bone-setter with some of his most conspicuous successes when he has been right, and with some of his most disastrous failures when he has been wrong; and a bone-setter who has become more fearful of failure than eager for success generally looks upon the hip-joint with suspicion. Mr. Hutton, at all events, must have learnt this lesson by experience, for he was not only extremely careful in his examination of the hip, but also seemed, as it appeared to me, by no means sorry when he found reason for letting it alone.

I saw with him one instance in which I thought he had a lucky escape, and which I could not understand at the time; but since the publication by Mr. Teale and Dr. Macnab of their cases of simulation of hip-joint disease by suppuration of the bursa over the trochanter major, I imagine that such a condition may have been the cause of my perplexity. The following is an outline of the case: A boy had been kicked on one hip by a pony, and the injury produced symptoms resembling those of morbus coxæ, for which the boy was treated. At

length he was brought to Mr. Hutton, who said the hip was "out," and operated in his usual manner. The boy had great and increased pain afterwards, and was ordered to apply poultices. In five days his friends sent word that he was much worse, and that a great quantity of matter had been discharged. I anticipated the worst possible issue to the case, and supposed that the movements must have done great mischief; but a month afterwards I met the boy walking in the street, in good health, free from pain, and with a scarcely perceptible limp.

Mr. Hutton entertained a belief that in all cases of hip disease the origin of the mischief was a fall or a blow on the part, and this conviction was never shaken by the absence of such an incident from the history related by the patient or his friends. He maintained, and doubtless with much truth, that blows and falls were often unknown to parents, and were soon forgotten, not only by children, but, if attended by no immediate ill results, also by children of a larger growth. The hip cases in which he was useful were probably those in which, after injury, the limb had been kept voluntarily at rest

for fear of exciting pain, or in which some inflammatory mischief had existed external to the joint, and had kept all the parts in a state of unnatural quiescence. A test to which he attached importance, and which points clearly to extra-articular as distinguished from intra-articular mischief, was that, in the absence of pain from direct pressure or shocks upon the heel, pain was still felt if the patient rested the heel firmly on the ground, and then, keeping it fixed as a pivot, attempted to rotate the foot inwards or outwards. A sign of similar import was the production of pain on stooping forwards. To these rough indications, however, the diagnostic skill of the surgeon should add others of a more precise character, gathered from a careful study and comparison of all the general and local symptoms of the case, and especially from the temperature of the body at different periods of the day, from the presence or absence of shivering, and from the state of the circulation and the secretions.

The hip is frequently the locality of some form of hysterical affection, and such disorders have doubtless contributed their quota to the credit

side of the bone-setter's account. When they have occasioned rest to the joint, or have been treated by counter-irritants, they may in course of time be followed by adhesions, and they must almost of necessity have been productive of stiffness in the muscles and tendon-sheaths, and of dryness in the synovial sacs. These conditions may be quite sufficient to overpower the efforts of a feeble will at voluntary motion, and to overcome them by manipulation will be to effect a cure. To treat them by rest, or by so-called moral suasion, is to leave an easy victory over the profession in the hands of quacks.

The practitioner should beware, however, of the grounds of his diagnosis in cases that are supposed to be hysterical, and should avail himself of all the resources by which art discovers the presence of disease, before he allows himself to be committed to any course. I was once made acquainted with the case of a young lady who complained of pain in the upper part of the left thigh, which was aggravated on movement. She lived in a fashionable watering-place, and was attended by

two physicians of great local repute. They pronounced the case to be hysterical, and decided against the reality of sufferings that the patient herself declared to be agonizing. After a long period a third physician was called in for a single consultation. He suggested the possibility of deep suppuration; but the others would not listen to him, and he unfortunately withdrew without pressing his opinion. Some months of pain and misery followed, and then at last a surgeon saw the limb. He at once gave exit to an enormous collection of matter from beneath the deep fascia of the thigh, and the unfortunate patient then in one sense recovered, but only to be more or less a cripple for life, in consequence of the extensive injury done to the muscles among which the pus had burrowed. In this case the attendants had permitted the word "hysteria" to stand between their judgments and the patent facts of the case.

It should be remembered, also, in considering the nature of affections of the hip in the female, that there exists a considerable degree of sym-

pathy between this joint and the uterus, and that inflammation in or about the former is not unfrequently associated with disorder of the latter.

Dr. Meadows has recently read to the Clinical Society the case of a lady in whom acute suppuration within the hip-joint followed the application of "tangle tents" to the cervix uteri. The general opinion of the Society was that the case was one of pyæmia; and it is known that Mr. Barwell regards ordinary "gonorrhœal rheumatism" as being itself a form of pyæmic infection. If these views are correct, we must expect to meet with various degrees of hip-joint disorder associated with, or consecutive to, uterine maladies. In the *Berlin. Med. Zeitung*, Dr. Hoppe has called attention to this. He says, that "in the course of uterine disease there may be well-marked hip-joint disease set up, as indicated by pain and tenderness in the region of the joint or the trochanter, and impeded movement, owing to the contraction of the adductors and flexors. Both sides may be affected, either simultaneously or in succession. It may exist only in a trifling degree; and

when it prevails to a greater extent, it may go on afterwards independently of the uterine affection. In moderate cases the affection of the hip-joint disappears with that of the uterus." If it should not do so, the result will probably be to leave behind adhesions, either within the joint or around it, and these, when the acute stage has subsided, properly directed movements may safely and effectually overcome.

The degree in which the crippling effects of ordinary rheumatic inflammation may be overcome by movement would be scarcely credible to any who had not witnessed the actual results of treatment. In these cases I believe the inflammatory deposits are chiefly extra-articular, and that they speedily undergo some kind of organization. They may be heard to tear under flexion with an audible rending sound, and the consequent restoration of free movement is always followed by the relief of any pre-existing pain, and generally by the gradual subsidence of heat or swelling. In these cases a recurrence of inflammation is perhaps less to be feared than in any

other; since rheumatism is a specific disorder, requiring specific constitutional conditions to call it into activity, and not liable to be lighted up by any merely local accident. The field here opened to treatment is a very wide one; since the number of rheumatic cases applying to bone-setters has been small in comparison with the number of sufferers, and since the suggestion that something is out and must be replaced would hardly commend itself to the common sense of the patients. A true and reasonable explanation of the condition and the means of cure would probably render many rheumatic people readily amenable to treatment; but it is right to caution those who would undertake such cases that the necessary manipulations are often more difficult than in cases of injury. They must be planned with care and forethought, and executed skilfully and with decision.

The joints most prone to partial dislocation from injury are probably those of the tarsus and wrist. Sir Astley Cooper mentions also the ankle, knee, shoulder, and elbow, as being liable

to this form of accident, and gives an account of the anatomical conditions in a partial dislocation of the humerus found in a subject dissected at St. Thomas's Hospital in 1819. Partial dislocation would be very likely to deceive a surgeon who was not fully prepared for the possibility of its occurrence, since the ordinary signs of complete displacement would be wanting, while at the same time mobility would be impaired. In such cases bone-setters have often been successful; since the displaced bone, when once started from its false position by the preliminary twist, would be likely to return at once to its natural relations with neighbouring parts.

In severe sprains it may be assumed, as a rule, that the amount of tension put upon the ligaments of the affected joint will be the measure of the injury done, and will also determine the nature of the process of repair. If a joint be forced in an abnormal direction by external violence, the muscles and soft parts surrounding it will yield; and, unless movement is checked by the apposition of bony surfaces, the stress will then be thrown

upon the ligaments. These, being non-elastic, must either hold or tear. In the former case the joint will escape with slight injury; in the latter, the process of repairing the torn fibres will be attended with more or less effusion, according to the extent of the rupture. This effusion, unless wholly re-absorbed, must remain in and around the ligament, like callus around a fracture of bone, more or less impeding movement. In some cases, too, the synovial membrane adherent to the inner surface of the ligament will be torn with it, and synovitis will be the probable result. In either case, the effect of prolonged rest may be to solidify and organize effusion in a position where it cripples movement. The art of the bone-setter has been to tear such effusions after they have become organized and firm. The skill of the surgeon will be better displayed in stretching and rendering them harmless while they are still tender. In the treatment of fracture, for example, too much pains can hardly be taken to commence early passive motion of the articulations of the affected limb, and on no account to dismiss as

cured a patient in whom this precaution has been neglected, with the wholly unfounded expectation that the stiffness will cure itself. Of late years, especially in fractures of the fore-arm, I have made it a rule to move the joints frequently from the very beginning of the treatment, taking the thumb, fingers, wrist, and elbow *seriatim*, and of course carefully steadying the fractured bones during the time.

I have already referred to the importance of the thumb-pressure as a means of fixing the attachment of an adhesion, and preventing the possibility of partial displacement of a bone, especially in the carpus or tarsus, by the force employed by the operator. I am disposed to think that this thumb-pressure exerts yet another beneficial influence, and that, by fixing the attachment of an adhesion, it secures that the adventitious material shall be broken through at some point of its own length, and not torn from either of its insertions. It is manifest that the former result would be far less likely to produce irritation or mischief than the latter.

In the case of all the larger joints it is the

ordinary practice of bone-setters to have them rubbed twice a day with neat's-foot oil, and kept constantly enveloped in linseed-meal poultices for a week before, and for some days after operating, and in many instances to have the joint steeped in water as hot as it can be borne for half an hour before commencing the manipulations. They believe that by these means they diminish the resistance of the muscles and the risk of subsequent inflammation. So many of their acts and precautions are based upon the results of large experience, that it would perhaps be hasty to infer that this practice would be as well dispensed with. Mr. Hutton, for example, was a shrewd and observant man, and the poulticing covered an interval of time during which there were many risks of his losing the case. I do not think he would have adhered to the custom unless he had seen reason to believe that he would incur danger by abandoning it. At all events, it amused and satisfied the patient, and gave an air of deliberateness to the manipulation eventually practised for his cure.

Among the symptoms which Mr. Hutton was wont to remark as evidence of a bone being "out" (that is, as evidence of the existence of a state of things in which he could do good) in the shoulder or hip, was the occurrence of acute pain in or near the joint on awaking, so that the patient, if a child, would wake up crying. I presume that in these cases the joint was moved so freely in the half-conscious period between sleeping and waking as to excite the pain in this manner.

It will surprise many to learn that actual dislocations rarely come under the notice of bone-setters. When they do come, it is probable that they are sometimes replaced, quite unconsciously on the part of the operator, by the ordinary movements that he employs. There has been of late years a growing tendency to substitute skill for force in the reduction of dislocations, especially in those of the hip and shoulder; and the basis of the new methods is generally a combination of rotation and flexion which the manipulations of a bone-setter may

very well chance to imitate. The method of reducing dislocations of the shoulder that was contrived by Schinzinger, for example, as well as that of Richet, the value of both of which has been confirmed by no less authorities than Professors Dumreicher and Von Pitha, will occur to every one as examples in point; and it is clear that what has thus been done designedly by surgeons may also now and then be accomplished accidentally by a quack. As a rule, however, bone-setters do nothing for actual dislocations; unless, by moving the displaced bone freely in its new position, they promote the attainment of that degree of usefulness which time in such cases is often found to restore.

## CHAPTER V.

### AFFECTIONS OF THE SPINE.

SINCE the publication of my original papers in the *Lancet*, a large number of inquiries have been addressed to me on the subject of the treatment by bone-setters of diseases of the spine; and I have thought that the importance of the subject is such that it can best be dealt with in a separate chapter. I will commence with narrating the history of what Mr. Hutton himself considered one of his "good cases."

Mrs. J——, on rising from her chair one day in 1864, caught her heel in her crinoline, and fell backwards upon her sacrum. She did not feel much pain from the fall at the moment, although she felt a good deal shaken. At this period she had been six weeks pregnant. On the fifth day from the date of the accident, having in the meantime, without any definite

cause of complaint, been "out of sorts," she noticed a feeling of stiffness and numbness extending over the whole of the body, but more especially in the extremities. Shortly after this occurred she was seized with convulsions of an epileptiform character. These convulsions recurred at varying intervals of sometimes three or four days, and at other times of ten days or a fortnight, until her confinement. After this event she was subject to them, but at longer intervals, until October 1869. Their increased frequency about this time induced her to consult Mr. Hutton, both she and her friends considering that, as she had never had any affection of this description previous to her fall, the blow on the back might fairly be looked upon as the cause of her trouble. A very tender spot was complained of at the junction of the last lumbar vertebra with the sacrum. Sensations which preceded the commencement of the fit were referred to that spot, and the opinion given by Mr. Hutton was that a bone was "out" there. On the three or four days preceding his visit she had many severe convulsions; she was suffering

from exhaustion consequent upon them, and fully expected to be obliged to remain in bed for some days to recover herself. She describes herself as suffering at the same time from headache and fulness; her back was very painful; she was flushed in the face, very depressed in spirits, her eyesight was dim, and she was very faint. When operated on in the manner hereafter to be described, she felt "a sudden feeling of numbness of the brain," this feeling travelling upwards from the spot where pressure was applied; and then immediately following this, a sensation which made her say "I'm all right." In a minute or two she got into bed without assistance, lay down on her left side—a position she had not been able to take before—her colour became natural, her head felt as if a weight had been removed from it, the dimness of sight disappeared, and a difficulty of raising the lids previously present was gone. She remained in bed for two hours, and then was able to be dressed and go downstairs. She had no return of the fits, and had been quite free from them up to October 1870.

As a contrast to the foregoing narrative, and in order to exhibit another side of the picture, I will quote a passage from Mr. Shaw's article on "Diseases of the Spine" in the fourth volume of the second edition of Holmes's System of Surgery.

Mr. Shaw says:—

"It is sometimes advantageous for the surgeon to be acquainted with the proceedings of quacks. Bone-setters and others frequently undertake to straighten the spine in cases of angular deformity, and as they occasionally have a certain temporary success which gains them reputation, it is more necessary to understand what they do, and at what a risk. They will take, for example, a young man who has a prominent hump in the dorsal region, consequent on disease which he may have had in childhood. By confining him in the recumbent position, employing mechanical means to stretch the back, and putting him on physical exercises, not forgetting to manipulate the projecting vertebræ sufficiently often, the spine may be made straighter, and the hump less distinct. The quack will probably represent that the cure has been

effected by his reducing the dislocated bones at the angular projection. But it is obvious that the apparent improvement has been brought about wholly by the extension of the sound portions of the spine above and below the apex of the angle. Each of these portions, besides being inclined from before backward, is curved; and it can be easily understood that by restoring them to a vertical line, the whole column will be rendered straighter, and the protuberance less distinct. But it is not to be expected that the improvement will last. As no change can be made in the relation of the vertebræ at the seat of anchylosis, and their surfaces in conformity with the angle they form are placed obliquely, the longitudinal axis of the upper and lower portions respectively must likewise be bent in reference to each other. Hence the spine will soon return to its former condition. But it is the danger of the treatment which constitutes the chief objection; and that arises from its being impossible to know beforehand what is the exact kind and degree of union that may have taken place at the seat of disease, or what

may be the state of the abscess. If the cavity of the abscess has been obliterated, the former communication between it and the carious bodies closed, and if the anchylosis has been perfect so that no remnant of the disease has been left, the treatment, however rough, might do no harm, if it did no good. But the result would be disastrous if the anchylosis were spurious, and the walls of the abscess were the only connection between the upper and lower portions in front. Owing to the union between the vertebræ at the back, the mobility would be destroyed, and it might be inferred that the anchylosis was perfect; yet the osseous bond might not be sufficiently strong to resist the violence sometimes employed in endeavouring to straighten the spine by ignorant practitioners."

"A friend related to the writer the following case, and also showed him the preparation connected with it.

"A young woman had caries of the lower cervical and upper dorsal vertebræ, from which she recovered, so as to be able to resume her employment. The angular deformity being considerable,

she applied to a quack, who promised to make the spine straight. The treatment consisted chiefly in employing mechanical means to stretch the neck. While increasing the power one day, there was an audible snap, with sudden pain. The patient was found immediately afterward paralysed from the neck downwards, and in a few days she died. It was found at the post-mortem examination that there was an abscess nearly obliterated in front of the carious vertebræ; and that the walls of the abscess had been extensively torn from their connections with the bones. The spinal cord was diffluent near the seat of injury. It cannot be doubted that when the force of extension was increased, and the snap heard, that the bony connections of the posterior segment and the vertebræ had been broken, the walls of the abscess detached from the bodies in front, and the spinal cord ruptured."

In considering the relation which these two histories respectively bear to the question now before us, I fear it must be admitted that the great importance of the spinal cord, and the

gravity of its diseases, have rather tended to make professional men overlook the osseous and ligamentous case by which it is enclosed, and which is liable to all the maladies that befall bones and ligaments elsewhere. The quack, on the other hand, who probably never heard of the spinal cord, recognizes only the presence of structures with which he is familiar, and deals with them as he does in other situations. The result is much the same as in the hip-joint. The quack every now and then cures conditions which the authorized practitioner had regarded with a sort of reverence because they were "spinal;" and he every now and then kills a patient, because this reverence did not exist for his protection. If the profession generally would so study the diseases of the spinal cord as to rescue them from specialists, the first step would be taken towards rescuing the diseases of the vertebral column from quacks.

However the matter may be explained, it is quite certain that many people now resort to bone-setters, complaining of a "crick," or pain, or weakness in the back, usually consequent upon

some injury or undue exertion, and that these applicants are cured by movements of flexion and extension, coupled with pressure upon any painful spot.

In a few cases Mr. Hutton was consulted on account of stiffness about the neck or cervical vertebræ; and he then was accustomed to straighten them in the way shown by Fig. 7. His left fore-arm would be placed under the lowered chin of the patient, with the hand coming round to the base of the occipital bone. The right thumb would then be placed on any painful spot on the cervical spine, and the chin suddenly elevated as much as seemed to be required. As far as my observation extends, the instances of this kind were not *bonâ fide* examples of adhesion, but generally such as might be attributed to slight muscular rigidity, or even to some form of imaginary malady. The benefit gained was probably rather due to the pain of the operation, and the effect produced by it upon the mind of the patient, than to any actual change in the physical conditions concerned.

FIG. 7.

For the lower regions of the spine he had two methods of treatment, differing in detail but not in principle. In the first, when a painful spot was found, the patient was made to get out of bed and to stand facing its side, with the front of the legs, or perhaps the knees—according to the height of the patient and of the bedstead—pressed against it. She was then told to bend forward until the bed was touched by the elbows. His left arm was then placed across the chest, and the thumb of the right hand upon the painful spot. Firm pressure was made with the thumb, and as soon as he felt that he had settled himself into such a position that he could obtain the full power of the left arm, the patient was told to assume the erect posture with as much rapidity and vigour as she could command. This movement was facilitated and expedited by the throwing up of his left arm and the opposing force of the right thumb. As a rule there seemed to be two painful spots, answering to the upper and lower border of the affected vertebra, so that the manœuvre would require to be repeated.

In the second method the patient was seated in a chair placed a short distance from the wall, so that the feet could be firmly pressed against it. She was told to bend forward and place her arms between her legs, with the elbows resting against the inner side of the knees: to sit firmly on the chair, and at a given signal to throw herself upright. The operator passed his left arm under the chest, placed his right thumb on the painful spot, and, in order to obtain firm and resisting pressure, rested his elbow against the back of the chair. The signal being given, the operator, keeping the fist clenched, so as to support his thumb, and the elbow being held firm in its position, when the patient throws herself upright, resists the approach of her back to the chair, and bends her head and shoulders as far backwards as possible, the position of the feet preventing any forward movement.

These two methods are used for cases in which pain is present in the dorsal vertebræ below the eighth, or in any of the lumbar. The treatment used for the upper dorsal and

lower cervical vertebræ was to place the operator's knee against the painful spot, and, with the hands placed upon the shoulders, to draw the upper part of the body as far back as possible.

In cases where pain was complained of in the dorsal and lumbar region, and the backward movements did not afford the required relief, the patient was made to bend sideways, and a similar process was gone through as in the other manipulations.

As a commentary upon all this there is manifestly little to say, except that the size of the vertebral canal is such as to admit of considerable diminution without injury to the cord, and that the bones and ligaments of the column, as already observed, are liable to the same results of injury, and to the same diseases, that befall bones and ligaments elsewhere.

The surgeon who is consulted about a case of spinal malady should first of all make sure that he is not frightened by a bugbear, and should then proceed to determine, by scientific methods of examination, whether or not he is in the presence

of disease of the nervous centres, or of caries, abscess, or other destructive change in the vertebral column. On such points as these, no man who possesses a thermometer, a microscope, and a test-tube has any excuse for remaining long in doubt; and if he is able to exclude the possibility of such conditions, he may then regard the spine simply as a portion of the skeleton, and may deal with it accordingly. Here, as elsewhere, injury and rest, or rest and counter-irritation, may produce adhesions that painfully limit movement, and that may at once be broken by resolute flexion and extension. Here, as elsewhere, partial displacement may occur, and may be rectified by pressure and motion. In the lower cervical, the dorsal and lumbar portions of the spine, the change of position of any single vertebra can be only slight—enough to produce pain and stiffness, but not enough to produce visible deformity. In the highest region, however, partial dislocations are sometimes more manifest. The following case is quoted from the hospital reports of the *Medical Times and Gazette* for August 5, 1865 :—

"John S——, aged 21, labourer, of St. Mary's Cray, was admitted on May 26, 1865, under Mr. Hilton.

"States that he has been ailing for the last three months; loss of appetite and general debility; has, however, followed his employment.

"On Sunday, May 14, he was stooping down to black his boots as they were on his feet, when suddenly he 'felt a snap' in the upper and back part of his neck; 'he felt as if some one had struck him there.' About a quarter of an hour after he became insensible, and continued so about half an hour; then he felt a stiffness and numbness at the back and side of his head and the back of his neck, with a fulness in the throat and difficulty of swallowing. At first he had no loss of power over his limbs, only slight pain down the right arm; some days after admission, however, he had partial loss of power in the right arm, which shortly recovered itself.

"On admission he carries his head fixed, and has pain on slightest attempt to rotate, flex, or extend the head; his jaw is partially fixed, and

he cannot open his mouth wide enough to admit of a finger being passed to the back of the pharynx; his voice is thick and guttural; deglutition not attended by any great uneasiness. Complains of all the symptoms before enumerated. Externally, over the spine of the second cervical vertebra, there is a tumour hard and resisting, but tender on pressure: this is evidently formed by the undue prominence of the spine of the axis itself; the tenderness is not general, but circumscribed; the parts all round are numb. He was put on his back on a hard bed, his head but slightly elevated; a small sandbag was placed beneath the projecting spine, and the whole head maintained in a fixed position by larger sandbags. He was ordered pulv. Dov., gr. v.; hydr. c. cretâ, gr. iij., bis die. This was continued for about ten days, when his gums became affected slightly, and it was then omitted. Marked improvement has taken place in his general appearance, and more particularly in his special symptoms. He continued thus till July 3, gradually and steadily improving. He then had acute rheumatic inflam-

mation of the right knee and elbow-joint, followed in a day or two by a similar state in the left knee-joint. There was no evidence of a pyæmic state. The joints were blistered, he has been treated with pot. nitr. and lemon-juice, and is now fast recovering. The tenderness and all the symptoms have disappeared, the projection still remaining, and he expresses himself as much relieved by the continued rest in bed.

"Mr. Hilton, in remarking on this case, observed that it had been demonstrated that the area of the vertebral canal might be diminished by one-third, provided that the diminution was slowly effected, without giving rise to any alarming, or indeed marked, symptoms of compression of the cord."

Now, there can be no doubt that most surgeons would agree that Mr. Hilton exercised a sound discretion in simply placing this man in conditions favourable to recovery, or in keeping him at rest until the axis was fixed in its new position, and the spinal cord accustomed to the change in its relations. There can be as little doubt that Mr. Hutton would have made thumb-pressure on

the prominent spine while he sharply raised the head. The probability is, that he would by this manœuvre have cured his patient; the possibility is, that he might have killed him. This sort of "make-a-spoon or spoil-a-horn" practice we may contentedly leave to quacks; and, without risking reputation in doubtful cases, I think we may find a considerable number which are not doubtful, in which skilled observation may exclude all elements of danger, and in which the rectification of displacement, or the rupture of adhesions, will be certainly followed by the most favourable results. For the discovery of these cases no settled rules can be laid down, since they can only be known by negations—by the absence of the symptoms that would give warning of danger. The diagnosis must be made in each instance for itself, and in each must depend upon the sagacity and the skill of the practitioner.

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